Secret-key encryption is also known as

A.Asymmetric encryption

B.Symmetric encryption

C.Secret-encryption

D.Private encryption => D

When you have a potential IoT idea you want to develop properly, what must you first define?

A.Its Unique Value Proposition

B.Problem it sets out to solve

C.Route to market

D.How it will work => B

Is it useful completing a business plan for a personal or in-house IoT product?

A.Yes

B.No => A

What is Fog computing?

A.It is a type of computing that enhances P2P applications.

B.It is a type of computing that sends controller data to a sensor.

C.It is a type of computing that disperses servers and services globally in distributed data centers.

D.It is a type of computing where services are hosted where they are used, such as at the network edge or with end devices. => D

What is an example of cloud computing?

A.A continuous interaction between people, processes, data, and things.

B.A service that offers on-demand access to shared resources.

C.A network infrastructure that spans a large geographic area.

D.An architectural style of the World Wide Web. => B

What is used to uniquely identify devices connected to the Internet?

A.gateway address

B.IP address

C.device name

D.URL => B

Which word or phrase most accurately sums up the main benefit of IoT technology?

A.Accuracy

B.Efficiencies

C.Energy use

D.Response time => B

How can IoT help combat climate change?

A.Smart devices working to reduce energy use.

B.Prevention of methane release from cows.

C.Free internet in cities to help people operate in the city more easily.

D.Predictive maintenance of wind turbines, preventing burn out. => A

Which of the following disruptions - caused by vehicles becoming fully autonomous - were the people surveyed most worried about?

A.Reduced private ownership of cars.

B.Less traffic lights on roads.

C.Reduced number of driving jobs.

D.Less space needed for parking.

E.Reduced vehicle emissions. => C

Smart cities use the Internet of Things to improve the quality of citizens' lives. True or False?

A.True

B.False => A

Which of the following is one of the ways IoT monitoring of dairy cows improves dairy farming?

A.The system tells you when cows are ready for milking, saving time spent on monitoring the herd.

B.The system can sound alarms when cows roam into neighbouring paddocks.

C.The system notices the cows that are unwell, so they are treated quicker, which speeds up recovery time.

D.The system results in more milk from the cows' udders for each milking. => C

What are the descriptors for Big Data? (as coined by IBM)

A.Speed, True, Diversity, Amount

B.Vast, Velocity, Variance, Verified

C.Volume, Velocity, Variety, Veracity => C

Which of the following functions does NOT apply to a typical data centre's services?

A.Data storage

B.Data management

C.Data analysis

D.Data security

E.Data generation => E

Which terminology deals with the excitation or stimulus applied to a system from an external source, for the generation of an output?

A.Input signal

B.Output signal

C.Error signal

D.Analogue signal

E.Feedback signal => A

Closed-loop Systems use feedback where a portion of the output signal is fed back to the input to reduce errors and improve stability.

A.True

B.False => A

Which challenge comes under securing the information?

A.Signaling

B.Security

C.Presence detection

D.Power consumption => B

Which challenge comes under IoT devices, reliable bidirectional signaling.

A.Signaling

B.Security

C.Presence detection

D.Power consumption => A

Which challenge comes when we use many devices on the same network?

A.Signaling

B.Security

C.Presence detection

D.Power consumption => D

Which of the following issues are considered in IoT?

A.Security Issue

B.Reliablity Issue

C.Standard Issue

D.All issues => D

IoT is a paradigm that involves ubiquitous presence in the environment.

A.True

B.False => A

IoT stands for \_\_\_\_\_\_\_\_\_\_

A.Industrial Internet of Things

B.Internet Internet of Things

C.Intelligence Internet of Things

D.Internal Internet of Things => A

Which possibility ensures load balancing and peak levelling of energy consumption?

A.Transportation and logistics

B.Energy and utilities

C.Automotive

D.Connected supply chain => b

Which possibility connects the production line to suppliers?

A.Transportation and logistics

B.Energy and utilities

C.Automotive

D.Connected supply chain => D

Which possibility is highest contributor to cost overhead for manufacturing facilities?

A.Transportation and logistics

B.Energy and utilities

C.Plant control flow operation

D.Energy management and resource optimization => D

\_\_\_\_\_\_\_\_\_ will enable the humans to access, control and manage the operation.

A.IoT

B.Bigdata

C.Network

D.Communication => A

In \_\_\_\_\_\_\_\_\_ the embedded devices and objects working under IoT are resource constrained.

A.Health

B.Industry

C.Home

D.Information system => D

What type of networks is interacting under IoT?

A.Heterogeneous only

B.Homogeneous Only

C.Both hetero and homogeneous

D.Neither hetero nor Homo => A

Managing of resources can be done by implementing \_\_\_\_\_\_\_\_

A.Protocols

B.Algorithms

C.Networks

D.Protocols and algorithms => D

Resource management will elaborate the key aspects of \_\_\_\_\_\_\_\_\_

A.Industrial managements

B.Energy management

C.Network management

D.Information management => C

Which category finds an increase in applications targeting health and fitness?

A.Personal IoT

B.Group IoT

C.Community IoT

D.Industrial IoT => A

Which category is used in the context of connected cars?

A.Personal IoT

B.Group IoT

C.Community IoT

D.Industrial IoT => B

Which category could be used by citizens to contribute to a smart city?

A.Personal IoT

B.Group IoT

C.Community IoT

D.Industrial IoT => C

Which category is used for business to consumer process?

A.Personal IoT

B.Group IoT

C.Community IoT

D.Industrial IoT => D

Voice recognition software and virtual assistant programs offer for \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_

A.Communication

B.Communication and Entertainment

C.Entertainment

D.Communication and Software => B

\_\_\_\_\_\_\_\_\_ is particularly appealing when the human's hands or eye are otherwise occupied

A.Voice recognition

B.Sound recognition

C.Amplitude recognition

D.Frequency recognition => A

Voice telephony is an efficient means of \_\_\_\_\_\_\_\_\_\_ with machines that can listen.

A.Mono-directional voice communication

B.Bi-directional voice communication

C.Voice recognition

D.Both bi directional and mono directional => B

Without \_\_\_\_\_\_\_\_\_\_\_ IoT devices can easily lead to catastrophe.

A.Software

B.Management system

C.Cloud

D.Devices => B

What IoT collects?

A.Human generated data

B.Sensor data

C.Machine generated data

D.Device data => C

Which requires data stream management?

A.Bigdata

B.IoT

C.Bigdata & IoT

D.Device data => B

The IoT operates at \_\_\_\_\_\_\_\_\_\_\_ scale

A.Machine

B.Human

C.Device

D.Sensor => A

Fritzing is open source, free software.

A.True

B.False => A

Which of these is NOT electronic equipment you can use for IoT prototyping?

A.Arduino microcontroller

B.Raspberry Pi microprocessor

C.Blackberry router

D.LED => C

What does the 'things' in Internet of Things refer to?

A.Smart phones and tablets

B.Machines and vehicles that operate themselves

C.A physical object with embedded electronics => C

The IoT increases the potential for machines to make smart decisions based on collected data, and to act on them, leaving people (apart from the original programmers and those setting the parameters) out of the loop. This is called M2M. Select an example of M2M from the descriptions below.

A.A sensor on a milking cow indicates that she is moving in a way that suggests she in on heat and will be receptive to insemination. She is placed on a watch list and the herd manager chooses to draught her out, after milking, for insemination.

B.An autonomous ambulance on an emergency call approaches an intersection and communicates with the signals to change the lights from red to green, to allow smooth passage through the intersection.

C.Sensors on a bridge detect strain in bridge joints. Areas of concern are flagged with the maintenance team who can respond to specific problems, rather than carrying out lengthy inspections. => B

What protocol is good for communication of IoT devices with restricted power and low data rates over a range of a few kilometres ?

A.Bluetooth

B.Zigbee

C.LoRaWAN

D.4G

E.WiFi => C

What is the main advantage of IPv6, and why does it suit IoT?

A.IPv6 provides many more IP addresses, which increases the potential number of hosts and amount of data.

B.IPv6 is more up to date protocol with leaner mechanisms which suit modern microprocessors.

C.IPv6 is faster and can carry more data. => A

Which of these media is currently NOT used in communicating data?

A.Wireless / electromagnetic waves

B.Hydrogen cables / electron ionisation

C.Fibre optics / pulses of light

D.Copper cables / electrical signals => B

Communication in a network is carried via a \_\_\_\_\_\_\_\_\_ ?

A.Sensor

B.Router

C.Medium

D.Device

E.Controller => C

When you upload a photo from your camera to a social media site, what kind of path is the information likely to travel?

A.End device -> Modem -> Controller -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server

B.End device -> Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's server -> social media site's ISP

C.End device -> Controller -> Modem -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server

D.Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's ISP -> social media site's server -> End device => C

Why will IoT put a strain on internet infrastructure?

A.The unprecedented amount of data

B.The variety of IoT protocols

C.The large number of unsecured devices connecting to the internet => A

Sometimes many devices share the same set of wires. This connection mode is referred to as a \_\_\_\_\_\_\_\_?

A.Train

B.Bus

C.Multi-point connection => B

In a communications network, peers can send messages to:

A.Peers in the same layer only

B.Peers in any layer

C.Peers in the layers above and below only => A

What is another way of thinking of the DTE?

A.As a Modem

B.As a Computer

C.As a Router => B

In telecommunications, RS-232 is used for \_\_\_\_\_\_\_communication transmission of data.

A.serial

B.parallel => A

Bluetooth uses low power radio waves in the frequency range of ...?

A.2.4 - 2.485Hz

B.2.4 - 2.485GHz

C.2.4 - 2.485MHz => B

Bluetooth has three classes, namely:

A.Industrial, Scientific, Medical

B.Class 1, Class 2 and Class 3 (100m, 10m and 1m range)

C.I, M and R (Industrial, Mobile and Rarely used) => B

Bluetooth is named after:

A.The scientist who invented it, who had blue teeth

B.The company that invented it, Ericsson's founder Harald Bluetooth

C.Danish King, Harald Gormsson who promoted communication between Denmark and Norway => C

The huge numbers of devices connected to the Internet of things have to communicate automatically, not via humans. What is this called?

A.Bot to Bot (B2B)

B.Machine to Machine (M2M)

C.InterCloud

D.Skynet => B

Which characteristics involve the facility the thing to respond in an intelligent way to a particular situation?

A.Intelligence

B.Connectivity

C.Dynamic Nature

D.Enormous Scale => A

\_\_\_\_\_\_\_\_ empowers IoT by bringing together everyday objects.

A.Intelligence

B.Connectivity

C.Dynamic Nature

D.Enormous Scale => B

The collection of data is achieved with \_\_\_\_\_\_\_\_ changes.

A.Intelligence

B.Connectivity

C.Dynamic Nature

D.Enormous Scale => C

The number of devices that need to be managed and that communicate with each other will be much larger.

A.Intelligence

B.Connectivity

C.Dynamic Nature

D.Enormous Scale => D

\_\_\_\_\_\_\_\_ a cellular network is expensive, especially with many IoT devices.

A.Signaling

B.Security

C.Bandwidth

D.Power consumption => C

Communication between \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_ is encrypted for security.

A.Cloud and device

B.End user and data center

C.Network and device

D.Cloud and Network => B

The embedded devices will form \_\_\_\_\_\_\_ network

A.ATM

B.Ethernet

C.FDDI

D.Ad-hoc => D

\_\_\_\_\_\_\_ are used to overcome the challenges of managing the resources of the IoT.

A.Clustering

B.Software agents

C.Synchronization techniques

D.Cluster, Software agent, and Synchronization techniques => D

BAN stands for \_\_\_\_\_\_\_\_

A.Body Area Network

B.Brain Area Network

C.Body Android Network

D.Brain Android Network => A

NFC stands for \_\_\_\_\_\_\_\_

A.Near Fast Communication

B.Near Field Communication

C.Near Field Customer

D.Near Field Connection => B

Phones act as actuators too.

A.True

B.False => A

WiFi uses how much frequency?

A.2.2GHz

B.3GHz

C.3.5GHz

D.2.4GHz => D

Bluetooth will transmit the data over the frequency band \_\_\_\_\_\_\_\_\_

A.2.4 to 2.7 GHz

B.2.4 to 3 GHz

C.2.4 to 2.485 GHz

D.2.4 to 2.6 GHz => C

Bluetooth operates at short distances.

A.True

B.False => A

Bluetooth will drain battery life.

A.True

B.False => A

What data security concerns do IoT devices pose?

A.The device being hijacked to harm another device or system

B.Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption

C.The devices being small and embedded into objects makes them easily vandalised or stolen => B

How does the addition of data due to IoT create privacy issues?

A.Systems struggle to deal with the large amount of data so data gets 'stuck outside security' waiting to be dealt with

B.Multiple data sets each stripped of identification initially can be combined as a whole and reveal identity

C.More data going through security measures inevitably means more security breakdowns and data leakage

D.IoT devices generally connect wirelessly creating additional harder to secure channels for data hijack => B

Which of the following is NOT a security measure?

A.Encryption

B.Password

C.Firewall

D.Firmware => D

How does fog computing reduce security risks?

A.It acts on IoT data closer to the source

B.It creates unclear connections that are difficult to intercept

C.It reduces the need for remote management

D.It scrambles electronic signals and encrypts all data => A

The resistance of a heater coil is 10 Ohms and the input voltage is 120V. What is the current?

A.12 amps

B.1,200 amps

C.0.083 amps => A

If you need to increase the current through a resistor in a circuit, what would you do?

A.Decrease the voltage applied to the resistor.

B.Increase the voltage applied to the resistor.

C.Increase the room temperature.

D.Increase the value of the resistor.

E.All of the above. => A

A DC motor requires a current of 10 Amperes to operate at full speed. The battery attached supplies 12 Volts. What resistance is required in the circuit to provide exactly 10 A to the motor?

A.12 ohms

B.120 ohms

C.1.2 ohms => C

When current flows through a resistor, the power involved produces heat. What measures can be taken to reduce the generation of heat inside a computer?

A.Reduce the voltage from the power supply.

B.Increase the total resistive value in the circuit.

C.Increase the physical size of resistors.

D.Use capacitors on the output of the power supply.

E.All of the above. => A

The combination of conditioning plus the element being controlled by the computer is called a \_\_\_\_\_\_\_\_\_ ?

A.DAC

B.Instrumentation amplifier

C.Motor

D.Actuator => D

The combination of a transducer with its signal conditioner is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ?

A.Instrumentation Amplifier

B.Sensor

C.Thermistor

D.ADC => B

What is the microcontroller used in Arduino UNO?

A.ATmega328p

B.ATmega2560

C.ATmega32114

D.AT91SAM3x8E => A

What does p refer to in ATmega328p?

A.Production

B.Pico-Power

C.Power-Pico

D.Programmable on chip => B

Arduino shields are also called as\_\_\_\_\_\_\_\_\_

A.Extra peripherals

B.Add on modules

C.Connectivity modules

D.Another Arduinos => B

Which is the software or a programming language used for controlling of Arduino?

A.Assembly Language

B.C Languages

C.JAVA

D.Any Language => D

A program written with the IDE for Arduino is called \_\_\_\_\_\_\_\_\_

A.IDE source

B.Sketch

C.Cryptography

D.Source code => B

Arduino IDE consists of 2 functions. What are they?

A.Build() and loop()

B.Setup() and build()

C.Setup() and loop()

D.Loop() and build() and setup() => C

How many digital pins are there in the UNO board?

A.14

B.12

C.16

D.20 => A

\_\_\_\_\_\_\_\_\_ board allows sewn into clothing.

A.UNO

B.RedBoard

C.LilyPad

D.Mega => C

There is efficiency gains from \_\_\_\_\_\_\_\_ all sorts of equipment.

A.Implementation

B.Analogous

C.Evolution

D.Digitization => D

A provider which produces 99 percent uptime \_\_\_\_\_\_\_\_

A.Security issues

B.Network Issues

C.Programming issue

D.Memory issue => B

With physical security, the stakes are incredibly \_\_\_\_\_\_\_\_

A.Very high

B.Low

C.Very low

D.High => D

Which digit does the colour yellow denote on a resistor colour band?

A.2

B.4

C.7

D.3 => B

A 47 Kohm resistor would have which colours on its first three bands?

A.red, white, blue

B.yellow, violet, white

C.orange, yellow, violet

D.yellow, violet, orange => D

Which digit does the colour orange denote on a resistor colour band?

A.9

B.1

C.6

D.3 => D

A resistor's first three colour bands are red, yellow and black. What is its value?

A.240 ohms

B.24 ohms

C.32 ohms

D.420000 ohms => B

Which digit is represented by a blue band on a resistor?

A.4

B.8

C.6

D.9 => C

Which digit is represented by a black band on a resistor?

A.100

B.1

C.1000

D.0 => D

A resistor's first three colour bands are brown, green and red. What is its value?

A.1500 ohms

B.250 ohms

C.2000 ohms

D.510 ohms => A

Which colour represents the digit 6 in the resistor colour code?

A.red

B.blue

C.pink

D.green => B

Which of these colours is NOT used in the resistor value colour code?

A.black

B.turquoise

C.white

D.violet => B

A micro-controller is...

A.small CPU made of transistors and conductors of heat and sound sensor

B.portable circuits capable of making other circuits

C.small computer on a single integrated circuit containing a processor core, memory, and programmable input/output peripherals

D.small chip made of silver => A

What does GPIO stand for?

A.General Purpose Inner Outer Propeller

B.General Purpose Interested Old People

C.General Purpose Input Output Pins

D.General Purpose Input Output Processor => C

Before your program "code" can be sent to the board, it needs to be converted into instructions that the board understands. This process is called...

A.Stop

B.Create Sketch

C.Compile

D.Serial Monitor => C

This shows you what the IDE is currently doing and is also where error messages display if you make a mistake in typing your program. (often called a syntax error)

A.Sketch Editor

B.Text Console

C.Line Number

D.Serial Monitor => B

This shows you what line number your cursor is on. It is useful since the compiler gives error messages with a line number.

A.Sketch Editor

B.Text Console

C.Line Number

D.Serial Monitor => C

A function is a series of programming statements that can be called by name. Which command is called once when the program starts:

A.loop()

B.(output)

C.setup()

D.(input) => C

A function is a series of programming statements that can be called by name. Which command is called repetitively over and over again as long as the Arduino has power.

A.loop()

B.(output)

C.setup()

D.(input) => A

A function is a series of programming statements that can be called by name. Which command delays the LED by a number of milliseconds is.

A.loop()

B.delay()

C.setup()

D.stop() => B

What is this line of code: // the loop function runs over and over again forever

A.A statement

B.A single line comment

C.A function definition

D.A bowl of cereal => B

What is this line of code: void loop() {

A.A statement

B.A single line comment

C.Part of a function definition

D.A banana => C

Which pin has a built-in LED?

A.Pin 13

B.Pin 10

C.Pin 8

D.Pin 7 => A

What are two two main types of Arduino pins?

A.Digital and analog.

B.Digital and modulation.

C.Pulse and analog. => A

If you make a voltage divider circuit with R1 = 10K and R2 = 10K, and your Vin is 12V, what will be your Vout?

A.12V

B.10V

C.6V

D.5V => C

How many bits are there in a byte?

A.256

B.8

C.16

D.10 => B

On a breadboard, where do you put a DIP package?

A.In the middle of the board

B.On the bottom side of the board

C.In the power rails

D.With the potato chips => A

What is the nominal voltage of 6 AAA batteries connected in parallel?

A.6V

B.9V

C.12V

D.1.5V => D

This is an unsigned data type that occupies 1 byte of memory. Same as the byte datatype. It encodes numbers from 0 to 255.

A.highByte()

B.unsigned char

C.unsigned long

D.volatile => B

This is used to include outside libraries in your sketch. This gives the programmer access to a large group of standard C libraries (groups of pre-made functions), and also libraries written especially for Arduino.

A.#include

B.break

C.void

D.#define => A

This clears (writes a 0 to) a bit of a numeric variable.

A.bitClear

B.sizeof()

C.pinMode

D.#include => A

The void keyword is used only in function declarations. It indicates that the function is expected to return no information to the function from which it was called.

A.HIGH

B.void

C.pin

D.LOW => B

Sensors play a big part in the Internet of Things, collecting data from the physical world. There is a long and growing list of sensor types, but some of the more common ones are found in smart phones. Which sensor in your phone collects information on your physical activity for health apps?

A.Gyroscope

B.Magnetometer

C.Proximity sensor

D.Accelerometer => D

In an industrial fan maintenance system, what physical change does Ian Howard say a sensor might detect, measure and transmit data on?

A.Vibration

B.Blade speed

C.Power

D.Wind direction => A

When the gate system at the dairy closes one gate and opens another to direct a cow into a particular area, what is (or what are) the actuators in play?

A.RF antennae detecting ID of cow

B.Light sensors detecting cow in gate

C.Pneumatic arms on gate mechanism

D.Movement sensor in cow's pendant => C

All of the parts of a complete IoT process need programming. But where in the following IoT process is programming needed for the system to be Internet of Things?

A.Soil sensor to microcontroller to the Cloud to microcontroller to fertilising mechanism

B.Soil sensor and Cloud and fertilising mechanism

C.Microcontroller and Cloud

D.Soil sensor and Microcontroller

E.Soil sensor and fertilising mechanism => C

Which of these sentences could be a line of programming code?

A.If temperature is more than 30 degrees C, run fan, else, run heater

B.When it gets too hot, turn the fan on otherwise keep heating the room

C.Run heater until temperature reaches 30 degrees C then cool it down => A

In the reticulation (water irrigation) system, what type of device is the outdoor camera?

A.Sensor

B.Actuator

C.Control

D.none of the above => A

What sort of actuator would you use to control the movement of a conveyor belt?

A.A linear actuator

B.An AC motor

C.A thermocouple

D.A water pump

E.A rubber belt => B

Which of the following IS NOT criteria to help select a wired communication protocol?

A.Speed

B.Number of wires per connection

C.Ability to transmit and receive information at the same time

D.Number of devices that need connecting

E.Distance to the nearest power point

F.Maximum distance between master and slaves => F

If we intend to include a servo motor as an actuator, what feature should we include when selecting a microcontroller?

A.Analogue to Digital converter

B.Digital to Analogue converter

C.GPIO pins

D.Pulse Width Modulation pin

E.I2C pins => D

In an IoT smart home system, sensors are connected to the home power outlet and are required to process some part of the collected data. What would be the best option to connect sensors to each other, as well as a central location for Internet connection, where high data rate is required?

A.Bluetooth

B.6LowPAN

C.WiFi

D.LoRa => C

From the list below, which is the LPWAN technology?

A.LoRa

B.WiFi

C.LTE

D.6LowPAN => A

One advantage of a closed loop feedback system is:

A.Simplicity of design

B.Ability to react to disturbances in the system

C.It is less stable than an open loop system

D.Depends on calibration for accuracy

E.All of the above => B

Fill in the blank. If we want to measure the temperature of a solution in a chemical process to within 0.1 degree Celsius, over a range of 100 degrees, our development board would need a \_\_\_\_\_\_\_\_\_\_\_\_ converter to meet that requirement for accuracy.

A.8 bit

B.10 bit

C.16 bit

D.32 bit => B

\_\_\_\_\_\_\_\_ provide the means to create capability that reflects true awareness of the physical world and people.

A.Sensors

B.Heterogeneity

C.Security

D.Connectivity => A

\_\_\_\_\_\_\_\_ in IoT as one of the key characteristics, devices have different hardware platforms and networks.

A.Sensors

B.Heterogeneity

C.Security

D.Connectivity => B

IoT devices are naturally vulnerable to \_\_\_\_\_\_\_\_ threats.

A.Sensors

B.Heterogeneity

C.Security

D.Connectivity => C

What is the popular method of organizing wireless network topologies?

A.Software

B.Synchronization

C.Network

D.Cluster => D

What is the role of communication protocol in IoT?

A.Smart cities

B.Cyber physical system

C.Mac layer issue

D.Managing energy => C

Which of the following is the future application of IoT?

A.Role of green IoT system

B.QoS in communication

C.Secure communication

D.Multimedia communication => A

The object of IoT will be empowered by \_\_\_\_\_\_\_\_\_\_\_

A.Network

B.Cloud

C.Devices

D.Connectivity => C

\_\_\_\_\_\_\_\_\_\_ layer is the communication layer that connects the IoT devices with WAN.

A.Internet layer

B.Application layer

C.Sensor layer

D.Network layer => D

\_\_\_\_\_\_\_\_ either built into smoke alarm and thermostat or in the form of small plug - in.

A.Microphones

B.Loudspeaker

C.Microphone and loudspeaker

D.Mic => A

\_\_\_\_\_\_\_\_ Will reduces the cost of the devices.

A.Intuitive

B.Voice telephony

C.Voice recognition

D.Voice Integration => D

How many analog pins on an Arduino Uno board?

A.5

B.6

C.7

D.8 => B

Which of the following function is used to set any pin in the state of HIGH/LOW ?

A.digitalRead

B.digitalWrite

C.analogWrite

D.pinMode => B

What does PWM stand for?

A.Pulse Width Modulation

B.Pulse Wide Module

C.Preventive Width Modulation

D.None of the other => A

Which function in the Arduino IDE is used to set any pin in output or input state?

A.digitalWrite

B.delay

C.pinMode

D.analogRead => C

How many PWM pins are present in the Arduino UNO?

A.1

B.3

C.6

D.9 => C

What among the following is an example of external interrupt for the Arduino?

A.Button

B.Resistor

C.LED

D.Capacitor => A

What will be the correct syntax to make a digital pin (say D2) as an output pin?

A.pinMode(2,output)

B.pinMode(2,Output)

C.pinMode(2,OUTPUT)

D.pinmode(2,OUTPUT) => C

Which of the following digital pins can be used in Arduino Nano/Uno to give interrupt?

A.D2

B.D6

C.D4,D5

D.D2,D3 => D

What is the size of EEPROM of the Arduino UNO?

A.1 KB

B.2 KB

C.4 KB

D.8 KB => A

Which function in the Arduino is used to start the serial communication using the COM port?

A.Serial.available()

B.Serial.begin()

C.serial.begin()

D.setup() => B

The action that will be performed using this switch case will be:switch (2): {case 1: digitalWrite(11,HIGH); case 2: analogRead(A3)}

A.D11 will become HIGH

B.Analog value of A3 will be read

C.D11 will become LOW

D.None of the other => B

While taking the input from the user in Arduino, which of these function is used in Sketch?

A.Serial.print

B.Serial.println

C.Serial.available

D.None of the other => C

What is the Tinkercad Circuits?

A.Its a just s software to create games

B.Tinkercad is a free online collection of software tools that help people create and simulation circuits.

C.Its a software for playing and create games.

D.None of the other => B

How do you zoom in on Tinkercad?

A.Spacebar

B.Use the arrows on the keyboard

C.Use the scroll wheel

D.Right Click => C

A photoresistor is an electronic component whose electrical resistance \_\_\_\_\_\_\_ when it is exposed to light.

A.changes

B.increases

C.doesn't change => A

What does this syntax mean? myservo.attach(9)

A.Connect the control wire 9 to GND pin

B.Connect the control wire for 9 seconds

C.Connect the control wire to 9 volts

D.Connect the control wire to digital pin 9 => D

In remote control terms, IR stands for what?

A.indirect radio

B.infrared

C.inside remote

D.instant reception => B

Infrared remote controls use what to carry signals between the remote control and the device it controls?

A.radio waves

B.sound

C.light => C

Infrared signals can be used for \_\_\_\_\_\_.

A.(a) long-range communication

B.(b) short-range communication

C.Both (a) and (b)

D.None of the other => B

Which sensor is LM35?

A.Pressure sensor

B.Humidity sensor

C.Temperature sensor

D.Touch sensor => C

LM35 provides \_\_\_\_\_\_\_ Volt for each degree count?

A.1

B.0.01

C.0.001

D.10 => B

What is the main purpose of the SRF05 sensor?

A.Water level sensor

B.Sound intensity sensor

C.Ranging sensor

D.Temperature sensor => C

What is the purpose of the pin named ECHO of HC-SR04 sensor?

A.Allows the ultrasonic sound wave to be sent from the sensor.

B.Provides the information that the ultrasonic sound wave is returned.

C.Allows the sensor to be fed with energy.

D.Provides the chassis connection of the sensor. => B

What does the AREF pin on the Arduino UNO?

A.Used to trigger a interrupt.

B.Reference voltage for analog inputs.

C.To reset the microcontroller.

D.Provides 8-bit PWM signal. => B

What pins can the Arduino UNO board communicate with the computer?

A.PWM pins

B.ADC pins

C.I2C pins

D.UART pins => D

What case is called serialEvent() interrupt?

A.Serial port shuts down.

B.When data is sent from the serial port.

C.When data comes from the serial port.

D.When the voltage is applied to the Arduino. => C

Each computer has its own Internet search engine.

A.True

B.False => B

What does CRM stand for?

A.Customer Research Management

B.Customer Relationship Management

C.Customized Research Management

D.Customer Research Metrics => B

How has e-commerce revolutionized business?

A.It has allowed businesses to utilize new avenues of advertising, selling, and distribution.

B.It attempts to level the playing field.

C.It transcends geographic boundaries.

D.All of the above => D

A \_\_\_\_\_ allows customers to continue browsing after selecting each item they wish to purchase

A.Shopping Cart

B.Forms-based interface

C.SSL connection

D.Virtual memory => A

Which of the following is NOT a standard used in E-Commerce?

A.EDI

B.XML

C.SETI

D.X12 => C

Which of the following is NOT the characteristics of consumer when studying about EC Consumer Behavior Model?

A.Age

B.Gender

C.E-mail

D.Education => C

Mechanism to protect private networks from outside attack is

A.Firewall

B.Antivirus

C.Digital signature

D.Formatting => A

While making payment using electronic check, credit and debit cards, the server authenticates the customers and verifies with the bank that funds are adequate before purchase

A.True

B.False => A

A computer communication technology that provides a way to interconnect multiple computer across short distance is

A.LAN

B.WAN

C.MAN

D.Wireless network => A

DNS is

A.The distributed hierarchical naming system

B.The vertical naming system

C.The horizontal naming system

D.The client server system => C

Which of the following is a technology constraint from the e-commerce macro-environment?

A.Propensity for consumers to purchase online.

B.Opt-in to e-mail required to avoid SPAM

C.Likelihood of fraudulent transactions

D.Taxation at source of purchase => C

In E-Commerce, HTTPS is a communication protocol that uses

A.Public key encryption

B.Secret key encryption

C.Private key encryption

D.Data key encryption => A

The concept of electronic cash is to execute payment by

A.Credit Card

B.ATM Card

C.Using computers over network

D.Cheque => C

A chemical manufacturer has transactions that are predominantly:

A.business to consumer.

B.consumer to consumer.

C.consumer to business

D.business to business => C

A B2B reverse auction is:

A.the same as a seller auction.

B.intended to reduce the price by increasing competition from suppliers.

C.always run through a B2B marketplace.

D.both the second and third answers above. => B

A computer system that permits multiple users to run programs at same time

A.Real time system

B.Multi programming system

C.Time sharing system

D.Multi tasking system => D

The mercantile process model consists of the following phase(s):

A.The pre-purchase phase

B.Purchase consummation phase

C.Post-purchase Interaction phase

D.All of the above => D

The most serious disadvantage of e-auctions is:

A.the risk of fraud.

B.Logistics.

C.unreliable auction software.

D.payment delays. => A

Many companies use intermediaries or trading assistants instead of implementing e-auctions themselves for each of the following reasons EXCEPT:

A.The company name is not widely recognized.

B.To bring many more buyers to the auction.

C.To avoid tax and legal fees.

D.Costs of auction intermediaries or assistants are less than the costs of physical auctions. => C

All of the following are potential benefits from auctions to sellers EXCEPT:

A.auctions can broaden the customer base and reduce cycle time.

B.sellers receive valuable price sensitivity information.

C.sellers are always anonymous.

D.sellers can liquidate large quantities of obsolete items very quickly. => C

Select the correct answer from the choices below which is corresponding with the following statement in STRATEGIC PLANNING TOOLS" : It is a methodology that surveys external opportunities and threats and relates them to internal strengths and weaknesses.

A.SWOT analysis

B.strategy map

C.balanced scorecard

D.BCG matrix => A

A major shortcoming with authentication services is:

A.two different authenticators may come up with different opinions regarding the authenticity and description of a given item.

B.it is impossible to tell whether many items are reproductions or genuine.

C.dishonest authenticators are the primary sources of fraud on the Internet.

D.most auction sites forbid the use of authentication services. => A

\_\_\_\_\_ work best with many buyers and many sellers.

A.Bartering

B.Dynamic exchanges

C.Forward auctions

D.Reverse auctions => A

The services provided through location-based m-commerce focus on key factors which include all of the following EXCEPT:

A.Geocaching, or determining the topography of an area.

B.Navigation, or plotting a route from one location to another.

C.Tracking, or monitoring the movement of a person or thing.

D.Timing, or determining the precise time at a specific location => A

Infrastructures that "support" the wireless connection are:

A.network access points, mobile communications server switches, and cellular transmitters and receivers.

B.WAP gateways, GPS locators, and GPS satellites.

C.PDAs, smartphones, and portable computers.

D.web servers, mobile devices, and microbrowsers. => A

A \_\_\_\_\_\_ is suitable for mobile users who need to make very short-range device-to-device wireless connections within a small space, such as a single room, and most commonly with Bluetooth.

A.personal area network

B.local area network

C.wireless area network

D.metropilitan area network => A

You are walking near a coffee shop and suddenly your cell phone beeps with a message: "Come inside and get a free biscotti with any purchase." This is an example of:

A.permission marketing

B.location-based advertising

C.customer relationship management

D.m-commerce => C

One way to share information with supply chain partners is wireless \_\_\_\_\_\_\_\_\_, which is the science of measuring physical phenomena such as temperature, volume, or an on/off condition at a remote point and transmitting the value to a distant recorder or observer

A.RFID

B.mobilization

C.osmosis

D.telemetry => D

WiMax and 3G wireless mobile technologies offer telemedicine application opportunities that include all of the following EXCEPT:

A.Reduced threat of malpractice suits because there is no hands-on interaction between the remote physician and the patient.

B.Prescriptions can be transferred electronically to the appropriate pharmacy for a no-wait pick-up by the patient.

C.Real-time consultation between a patient in one location and a medical specialist in another.

D.Wearable heart monitors linked to a cell phone can automatically contact doctors or family members at the first sign of health problems. => A

All of the following about RFID are true EXCEPT:

A.An RFID tag can hold 20 times the amount of information a bar code can hold, and the tag can be read through cardboard, wood, and plastic at a range of up to 100 feet

B.An RFID tag includes an antenna and a chip with information about the item

C.An RFID reader contains a radio transmitter and receiver

D.An RFID tag remains inactive until radio frequency energy from the tag's radio transmitter hits its antenna, giving the chip enough power to emit a 96-bit string of information => A

Digital Signature is

A.Scanned Signature on Computer

B.Code number of the sender

C.Public Key Encryption

D.Software to recognize signature => D

The method(s) of payment for online consumers are

A.Electronic cash

B.Credit/debit

C.Electronic checks

D.All of the above => D

Which of the following statements are INCORRECT about company-centric marketplaces?

A.They are marketplaces which focus on a single company's purchasing needs or selling needs.

B.They are generally public entities owned by that company.

C.They support for buying needs (many to one, or buy-side).

D.They support for selling needs (one to many, or sell-side). => B

As in e-commerce, m-commerce B2C applications are concentrated in each of the following areas EXCEPT:

A.retail shopping for products and services

B.telecommunications

C.targeted advertising

D.providing content for a fee through mobile portals => B

All of the following about wireless wide area networks (WWAN) are true EXCEPT:

A.The single WWAN network standard insures compatibility of handsets within and between countries.

B.Most WWANs are cellular phone networks.

C.At the center of each cell is a base station transceiver or cell tower that is used to send and receive signals to and from mobile devices operating within the cell.

D.When a device is turned on, a SIM card inside the device identifies itself to the WWAN. => A

Which of the following is an example of edutainment?

A.Two or more students sharing music over the Internet

B.An online science fiction game whose object is to blast as many aliens as possible in a 60 second round

C.A community college providing an online college course on digital media

D.An online game that uses colorful characters to teach young children about numbers => D

Which of the following statements about blogs is not true?

A.A blog is a personal Web site, open to the public, in which the owner expresses his or her feelings or opinions.

B.Blogs became very popular after the September 11, 2001 terrorist attacks when people were looking for as many sources of information as possible and for personal connections to the tragedy.

C.Blogs are limited to one-way communication.

D.The most common types of blogs are professional blogs. => C

P2P systems have all of the following key characteristics EXCEPT:

A.They provide for real-time access to other users through techniques such as instant messaging and multichannel collaboration applications.

B.The users' computers can act as both clients and servers.

C.The overall system is well integrated, but lacks tools for easy creation of content or for adding functionalities.

D.They support cross-networking protocols such as SOAP or XML-RPC, which enables a program on one computer to execute a program on a server computer. => C

More and more people are willing to pay for digital music, as shown by the success of \_\_\_\_\_\_\_\_.

A.Napster

B.Kazaa

C.Apple's iTunes

D.P2P => C

All of the following are examples of e-government EXCEPT:

A.a company sells army and navy surplus supplies at auction over the Internet.

B.a contractor submits an application for a building permit using a city hall Web site.

C.an unemployed worker consults a Web site operated by the state employment department to learn about job openings in his city.

D.a state purchasing officer places an online order for office supplies from an e-catalog sent to her by a national office supply store. => A

A(n) \_\_\_\_\_ is a computer system capable of integrating, storing, editing, analyzing, sharing, and displaying spatial information.

A.geographical information system

B.global positioning system

C.l-commerce system

D.on-star system => A

Which of the following statements about blogs is not true?

A.A blog is a personal Web site, open to the public, in which the owner expresses his or her feelings or opinions

B.Blogs became very popular after the September 11, 2001 terrorist attacks when people were looking for as many sources of information as possible and for personal connections to the tragedy

C.Blogs are limited to one-way communication

D.The most common types of blogs are professional blogs => C

The tasks of KM include each of the following EXCEPT:

A.creating knowledge repositories where knowledge can be stored and retrieved easily

B.enhancing a knowledge environment in order to conduct more effective knowledge creation, transfer, and use

C.restricting knowledge access to prevent its transfer between individuals

D.managing knowledge as an asset so as to increase the effective use of knowledge assets over time => C

\_\_\_\_\_\_\_ involves using various computer-based tools and techniques to analyze transaction data and generate new ideas

A.Knowledge creation

B.Knowledge capture

C.Knowledge classification

D.Knowledge management => A

Most universities use e-learning:

A.exclusively in reaching students who couldn't otherwise attend classes.

B.only when forced by administrators to use it as a way to recruit distant students or reduce costs.

C.as a total replacement for traditional classrooms.

D.as a supplementary channel to traditional classrooms. => D

One initiative underway that could lead to widespread support for the introduction of RFID is the \_\_\_\_\_, which identifies the manufacturer, producer, version, and serial number of each item and does not require line-of-sight contact to be read.

A.Electronic Product Code

B.Universal Product Code

C.Smart Product Network

D.Sensor Network => A

Wal-Mart and Levi Strauss collaborate on demand forecasting in order to optimize the flow of materials along the supply chain. This is an example of:

A.reducing design cycle time

B.APS (Advanced Planning and Scheduling)

C.CPFR (Collaborative Planning, Forecasting and Replenishment)

D.reducing product development time => C

A major block in the widespread implementation of collaborative commerce is:

A.the theory of collaborative commerce hasn't been proven effective in real-world applications.

B.the technology needed isn't available.

C.collaborative commerce is extremely expensive.

D.the lack of universally accepted standards. => D

What data security concerns do IoT devices pose?

A.The device being hijacked to harm another device or system

B.Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption

C.The devices being small and embedded into objects makes them easily vandalised or stolen => B

Which of the following IS NOT a characteristic of semiconductors?

A.They are better conductors than insulators.

B.They can be contaminated to improve their semiconductor properties.

C.They are abundantly found in nature.

D.Their semiconductor properties change as materials age.

E.All of the above. => D

Which of the following statements about sensors and actuators are true? (select 3):

A.Transducers change their physical properties in response to changes in the environment.

B.The Wheatstone Bridge converts a change in resistance into a change in voltage.

C.All sensors use instrumentation amplifiers.

D.Analogue to digital converters are needed to convert numbers produced by a computer into signals that can control actuators.

E.Strain gauges could be used to detect deflection in a concrete beam. => A, B, E

Which of the following sensors could be used to detect if an airplane is flying in cruise mode (horizontally), or if it is taking off or landing? (select 2):

A. A tilt sensor

B. A 3-axis accelerometer

C. A 3-axis gyroscope

D. A radar

E. A 3-axis magnetometer => A, C

Which of the following IS NOT criteria to help select a wired communication protocol?

A. Speed

B. Number of wires per connection

C. Ability to transmit and receive information at the same time

D. Number of devices that need connecting

E. Distance to the nearest power point

F. Maximum distance between master and slaves => E

Which of the following statements about communication protocols are true? (select 2):

A. Multi-drop and multi-point are the same thing, but one is American and the other is European nomenclature.

B. In a multilayer network, peers in one layer can listen but cannot talk directly to the peers in other layers.

C. In master-slave networks, the master can listen to only one slave at a time.

D. In master-slave multi-drop networks, all slaves can listen to the master at the same time.

E. In SPI networks, the number of devices that can be included is only limited by the length of the wires and the physical space in the board. => C, D

Most IoT systems utilise microcontroller units (MCUs) to collect data and transfer it to the processing units through the Internet. The advantages of using MCUs include: (select 3)

A. They are relatively simple to use, as MCUs do not require an operating system to function and are easy to interface with external components such as sensors.

B. An MCU is usually sufficient to provide processing power and functionality in most IoT systems, thus making it economically viable for IoT applications.

C. Due to their simplicity, MCUs are less vulnerable to security attacks.

D. MCUs normally run an operating system, which reduces development time.

E. MCUs can process and store large amounts of data locally. => A, B, C

If we intend to include a servo motor as an actuator, what feature should we include when selecting a microcontroller?

A. Analogue to Digital converter

B. Digital to Analogue converter

C. GPIO pins

D. Pulse Width Modulation pin

E. I2C pins => D

Which of the following should be considered when implementing a low power IoT device (or, which attributes will impact power usage on an IoT device)? (select 3)

A. Clock rate of the CPU

B. Sensor resolution

C. Number of attached sensors

D. Supply voltage

E. RAM => A, C, D

In an IoT smart home system, sensors are connected to the home power outlet and are required to process some part of the collected data. What would be the best option to connect sensors to each other, as well as a central location for Internet connection, where high data rate is required?

A. Bluetooth

B. 6LowPAN

C. WiFi

D. LoRa => C

From the list below, which are the two LPWAN technologies?

A. LoRa

B. WiFi

C. LTE

D. Sigfox

E. 6LowPAN => A, D

Fill in the blank: System \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be a major problem, especially in badly designed closed-loop systems, as they may try to over-correct any errors which could cause the system to lose control and oscillate.

A. stability

B. scalability

C. security

D. useability

E. feedback => A

Which terminology deals with the excitation or stimulus applied to a system from an external source, for the generation of an output?

A. Input signal

B. Output signal

C. Error signal

D. Analogue signal

E. Feedback signal => A

Which of the following is an example of a closed loop system?

A. Dishwashing machine

B. Air-conditioning unit

C. Bread toaster

D. Electric hand drier

E. Automatic door opener => B

Which statements best describes the 'Block Diagram' representation of systems? (select 3)

A. Block diagrams are a series of interconnected black boxes that contain the details of complex components of an electronic system.

B. Block diagrams are used to reduce the complexity of electronic systems by packaging details within 'black boxes'.

C. Block diagram components may represent individual components or complete sub systems.

D. Block diagrams increase the complexity of electronic systems by packaging details within 'black boxes'.

E. Block diagrams are seldom used in IoT systems. => A, B, C

One advantage of a closed loop feedback system is:

A. Simplicity of design

B. Ability to react to disturbances in the system

C. It is less stable than an open loop system

D. Depends on calibration for accuracy

E. All of the above => B

Which six of the following statements are TRUE?

A. Things in the IoT have some intelligence and the ability to exchange information with other things.

B. Electricity is a form of thermal energy.

C. According to Ohm's Law, the higher the voltage, the smaller the resistance.

D. For a given voltage, a small resistance allows the flow of more electric current than a big resistance.

E. Capacitors and inductors store energy.

F. Diodes behave like a small resistor when they are forward biased.

G. Bipolar Junction Transistors (BJTs) are widely used in modern digital electronics because they consume a negligible amount of current during transitions.

H. Increasing the sampling rate of an ADC would increase the quality of the acquired signal.

I. A 10-bit DAC, with a reference voltage of 5 volts, cannot produce positive and negative voltages.

J. The Arduino Uno microcontroller board has all the hardware necessary to implement a simple IoT thing. => A, D, E, F, H, J

Which five of the following statements about the end of the line things are TRUE?

A. Open loop control systems are more complex than closed loop control systems.

B. Transducers change one of their properties in response to changes in the environment.

C. All sensors require an analogue front-end (instrumentation amplifier).

D. A microphone is a kind of actuator.

E. A light-emitting diode (LED) is a kind of actuator.

F. The living lab at Curtin University uses vibration sensors to detect and measure movement in elevated walkways.

G. All IoT things have sensors and/or actuators.

H. The Ethernet is widely used to communicate IoT things over short distances.

I. RS-232 offers the fastest throughput in wired communications over short distances.

J. I2C simplifies the interconnection of components in a printed circuit board. => A, B, E, F, G, J

If communication to multiple slave subsystems is required, which communication protocols would be suitable? (select 3)

A. Serial RS232

B. USB

C. SPI

D. I2C => B, C, D

PID is a form of control with 3 feedback methods: Proportional, Integral, and Derivative. What is the purpose of each term?

A. P corrects accumulation of errors, D instances of errors, I counteracts overshoot caused by P and D

B. I corrects accumulation of errors, D instances of errors, P counteracts overshoot caused by D and I

C. D corrects accumulation of errors, P instances of errors, I counteracts overshoot caused by D and P

D. D corrects instances of errors, P corrects accumulation of errors, I counteracts overshoot caused by D and P

E. P corrects instances of errors, I corrects accumulation of errors, D counteracts overshoot caused by P and I correct => E

Which word or phrase most accurately sums up the main benefit of IoT technology? => Efficiencies

Which of the following disruptions - caused by vehicles becoming fully autonomous - were the people surveyed most worried about? => Reduced private ownership of cars.

Smart cities use the Internet of Things to improve the quality of citizens' lives. True or False? => True

Which of the following is one of the ways IoT monitoring of dairy cows improves dairy farming? => The system notices the cows that are unwell, so they are treated quicker, which speeds up recovery time.

How can IoT help combat climate change? => Smart devices working to reduce energy use.

What does the 'things' in Internet of Things refer to? => A physical object with embedded electronics

Sensors play a big part in the Internet of Things, collecting data from the physical world. There is a long and growing list of sensor types, but some of the more common ones are found in smart phones. Which sensor in your phone collects information on your physical activity for health apps? => Accelerometer

In an industrial fan maintenance system, what physical change does Ian Howard say a sensor might detect, measure and transmit data on? => Wind direction

When the gate system at the dairy closes one gate and opens another to direct a cow into a particular area, what is (or what are) the actuators in play? => Pneumatic arms ongate mechanism

The IoT increases the potential for machines to make smart decisions based on collected data, and to act on them, leaving people (apart from the original programmers and those setting the parameters) out of the loop. This is called M2M. Select an example of M2M from the descriptions below. => An autonomous ambulance on an emergency call approaches an intersection and communicates with the signals to change the lights from red to green, to allow smooth passage through the intersection.

What is the main advantage of IPv6, and why does it suit IoT? => IPv6 provides many more IP addresses, which increases the potential number of hosts and amount of data.

What protocol is good for communication of IoT devices with restricted power and low data rates over a range of a few kilometres ? => LoRaWAN

Which of these media is currently NOT used in communicating data? => Hydrogen cables / electron ionisation

Communication in a network is carried via a \_\_\_\_\_\_\_\_\_ ? => Medium

When you upload a photo from your camera to a social media site, what kind of path is the information likely to travel? => End device -> Controller -> Modem -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server

All of the parts of a complete IoT process need programming. But where in the following IoT process is programming needed for the system to be Internet of Things? => Microcontroller and Cloud

What are the descriptors for Big Data? (as coined by IBM) => Volume, Velocity, Variety, Veracity

Which of the following functions does NOT apply to a typical data centre's services? => Data generation

Which of these sentences could be a line of programming code? => If temperature is more than 30 degrees C, run fan, else, run heater

Why will IoT put a strain on internet infrastructure? => The unprecedented amount of data

What data security concerns do IoT devices pose? => Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption

How does the addition of data due to IoT create privacy issues? => Multiple data sets each stripped of identification initially can be combined as a whole and reveal identity

Which of the following is NOT a security measure? => Firmware

How does fog computing reduce security risks? => It acts on IoT data closer to the source

The resistance of a heater coil is 10 Ohms and the input voltage is 120V. What is the current? => 12 amps

A DC motor requires a current of 10 Amperes to operate at full speed. The battery attached supplies 12 Volts. What resistance is required in the circuit to provide exactly 10 A to the motor? => 1.2 ohms

A vacuum cleaner has a maximum power consumption of 1000 W and is powered by 240 Volts. What is the current used? => 4.17 amps

If you need to increase the current through a resistor in a circuit, what would you do? => Increase the voltage applied to the resistor.

When current flows through a resistor, the power involved produces heat. What measures can be taken to reduce the generation of heat inside a computer? => Reduce the voltage from the power supply.

The combination of a transducer with its signal conditioner is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ? => Sensor

The combination of conditioning plus the element being controlled by the computer is called a \_\_\_\_\_\_\_\_\_ ? => Actuator

In the system above, what type of device is the outdoor camera? => Sensor

What type of device is the 100K resistor? => Actuator

What type of device is the garden light? => Actuator

What type of device is the door alarm? => Sensor

What type of device is the moisture detector? => Sensor

What type of device is the internet? => None of the above

(Sensor

Actuator

Control )

What type of device is the rain detector? => Sensor

What type of device is the CPU? => Control

What type of device is the water valve? => Actuator

What type of devices are the power supplies? => None of the above

(Sensor

Actuator

Control )

What type of devices are the relays? => Actuator

Sometimes many devices share the same set of wires. This connection mode is referred to as a \_\_\_\_\_\_\_\_? => Bus

In a communications network, peers can send messages to: => Peers in the layers above and below only

What is another way of thinking of the DTE? => As a Computer

What sort of actuator would you use to control the movement of a conveyor belt? => An AC motor

Which of the following IS NOT criteria to help select a wired communication protocol? => Maximum distance between master and slaves

Bluetooth uses low power radio waves in the frequency range of ...? => 2.4 - 2.485GHz

Bluetooth has three classes, namely: => Class 1, Class 2 and Class 3 (100m, 10m and 1m range)

Bluetooth is named after: => Danish King, Harald Gormsson who promoted communication between Denmark and Norway

If we intend to include a servo motor as an actuator, what feature should we include when selecting a microcontroller? => GPIO pins

In an IoT smart home system, sensors are connected to the home power outlet and are required to process some part of the collected data. What would be the best option to connect sensors to each other, as well as a central location for Internet connection, where high data rate is required? => WiFi

Fill in the blank: System \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be a major problem, especially in badly designed closed-loop systems, as they may try to over-correct any errors which could cause the system to lose control and oscillate. => stability

Which terminology deals with the excitation or stimulus applied to a system from an external source, for the generation of an output? => Input signal

One advantage of a closed loop feedback system is: => Ability to react to disturbances in the system

Fill in the blank. If we want to measure the temperature of a solution in a chemical process to within 0.1 degree Celsius, over a range of 100 degrees, our development board would need a \_\_\_\_\_\_\_\_\_\_\_\_ converter to meet that requirement for accuracy. => 10 bit

The combination of a transducer with its signal conditioner is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ?

a. Instrumentation Amplifier

b. Sensor

c. Thermistor

d. ADC => b

The combination of conditioning plus the element being controlled by the computer is called a \_\_\_\_\_\_\_\_\_ ?

a. DAC

b. Instrumentation amplifier

c. Motor

d. Actuator => d

What is the microcontroller used in Arduino UNO?

a. ATmega328p

b. ATmega2560

c. ATmega32114

d. AT91SAM3x8E => a

What does p refer to in ATmega328p?

a. Production

b. Pico-Power

c. Power-Pico

d. Programmable on chip => b

Arduino shields are also called as\_\_\_\_\_\_\_\_\_

a. Extra peripherals

b. Add on modules

c. Connectivity modules

d. Another Arduinos => b

Which is the software or a programming language used for controlling of Arduino?

a. Assembly Language

b. C Languages

c. JAVA

d. Any Language => d

A program written with the IDE for Arduino is called \_\_\_\_\_\_\_\_\_

a. IDE source

b. Sketch

c. Cryptography

d. Source code => b

Arduino IDE consists of 2 functions. What are they?

a. Build() and loop()

b. Setup() and build()

c. Setup() and loop()

d. Loop() and build() and setup() => c

How many digital pins are there in the UNO board?

a. 14

b. 12

c. 16

d. 20 => a

\_\_\_\_\_\_\_\_\_ board allows sewn into clothing.

a. UNO

b. RedBoard

c. LilyPad

d. Mega => c

There is efficiency gains from \_\_\_\_\_\_\_\_ all sorts of equipment.

a. Implementation

b. Analogous

c. Evolution

d. Digitization => d

A provider which produces 99 percent uptime \_\_\_\_\_\_\_\_

a. Security issues

b. Network Issues

c. Programming issue

d. Memory issue => b

With physical security, the stakes are incredibly \_\_\_\_\_\_\_\_

a. Very high

b. Low

c. Very low

d. High => d

Which digit does the colour yellow denote on a resistor colour band?

a. 2

b. 4

c. 7

d. 3 => b

A 47 Kohm resistor would have which colors on its first three bands?

a. red, white, blue

b. yellow, violet, white

c. orange, yellow, violet

d. yellow, violet, orange => d

If statment <= Is used in conjunction with a comparison operator, tests whether a certain condition has been reached, such as an input being above a certain number.

for loop <= The for statement is used to repeat a block of statements enclosed in curly braces.

digitalWrite() <= Write a HIGH or a LOW value to a digital pin.

analogWrite() <= Writes an analog value (PWM wave) to a pin.

digtalRead() <= Reads the value from a specified digital pin, either HIGH or LOW.

analogRead() <= Reads the value from the specified analog pin.

LED <= A light-emitting diode (LED)

void setup() <= The setup() function is called when a sketch starts. Use it to initialize variables, pin modes, start using libraries, etc.

void loop() <= After creating a setup() function, which initializes and sets the initial values, the loop() function does precisely what its name suggests, and loops consecutively, allowing your program to change and respond.

pin <= A pin is a pronged contact as part of a signal interface in a computer.

HIGH <= The Arduino will report HIGH if:

A voltage greater than 3 volts is present at the pin 5V board.

LOW <= the Arduino will report LOW if:

A voltage less than 3 volts is present at the pin 5V boards.

pinMode() <= Configures the specified pin to behave either as an input or an output.

delay() <= Pauses the program for the amount of time (in miliseconds) specified as parameter. (There are 1000 milliseconds in a second.)

void <= The void keyword is used only in function declarations. It indicates that the function is expected to return no information to the function from which it was called.

int <= Integers are your primary data-type for number storage.

Function <= Code that performs a defined task and then returned to the area of code from which the function was "called".

random() <= The random function generates pseudo-random numbers.

Ex.

random(max)

random(min, max)

Random number between min and max, Below Max.

comment <= Comments are lines in the program that are used to inform yourself or others about the way the program works. Indicated by //

strong typing <= Assigning a data type to all variables, including parameters; enforced by using "Option Strict"

In an industrial fan maintenance system, what physical change does Ian Howard say a sensor might detect, measure and transmit data on?

A. Vibration

B. Blade speed

C. Power

D. Wind direction => A. Vibration

Which word or phrase most accurately sums up the main benefit of IoT technology?

A. Economies

B. Enhanced safety

C. Accuracy

D. Efficiencies

E. Energy use

F. Response time => D

What protocol is good for communication of IoT devices with restricted power and low data rates over a range of a few kilometres ?

Which of these media is currently NOT used in communicating data?

Wireless / electromagnetic waves

Hydrogen cables / electro ionisation

Fibre optics / pulses of light

Copper cables / electrical signals

A. Bluetooth

B. Zigbee

C. LoRaWAN

D. 4G

E. WiFi => C

Communication in a network is carried via a \_\_\_\_\_\_\_\_\_ ?

A. Sensor

B. Router

C. Medium

D. Device

E. Controller => C

How does the addition of data due to IoT create privacy issues?

A. Systems struggle to deal with the large amount of data so data gets 'stuck outside security' waiting to be dealt with

B. Multiple data sets each stripped of identification initially can be combined as a whole and reveal identity

C. More data going through security measures inevitably means more security breakdowns and data leakage

D. IoT devices generally connect wirelessly creating additional harder to secure channels for data hijack => B

How does fog computing reduce security risks?

A. It acts on IoT data closer to the source

B. It creates unclear connections that are difficult to intercept

C. It reduces the need for remote management

D. It scrambles electronic signals and encrypts all data => A

A vacuum cleaner has a maximum power consumption of 1000 W and is powered by 240 Volts. What is the current used?

A. 24 amps

B. 4.17 amps

C. 0.24 amps => B

If you need to increase the current through a resistor in a circuit, what would you do?

A. Decrease the voltage applied to the resistor.

B. Increase the voltage applied to the resistor.

C. Increase the room temperature.

D. Increase the value of the resistor.

E. All of the above. => B

What type of device is the door alarm? (sơ đồ)

A. Sensor

B. Actuator

C. Control

D. None of the above => A

What type of device is the moisture detector? (sơ đồ)

A. Sensor

B. Actuator

C. Control

D. None of the above => A

What type of device is the CPU? (sơ đồ)

A. Sensor

B. Actuator

C. Control

D. None of the above => C

What type of devices are the power supplies? (sơ đồ)

A. Sensor

B. Actuator

C. Control

D. None of the above => D

Sometimes many devices share the same set of wires. This connection mode is referred to as a \_\_\_\_\_\_\_\_? (sơ đồ)

A. Train

B. Bus

C. Multi-point connection => B

What sort of actuator would you use to control the movement of a conveyor belt?

A. A linear actuator

B. An AC motor

C. A thermocouple

D. A water pump

E. A rubber belt => B

If we intend to include a servo motor as an actuator, what feature should we include when selecting a microcontroller?

A. Analogue to Digital converter

B. Digital to Analogue converter

C. GPIO pins

D. Pulse Width Modulation pin

E. I2C pins => D

Which of the following disruptions - caused by vehicles becoming fully autonomous - were the people surveyed most worried about?

A. Reduced private ownership of cars.

B. Less traffic lights on roads.

C. Reduced number of driving jobs.

D. Less space needed for parking.

E. Reduced vehicle emissions. => A

Which of the following is one of the ways IoT monitoring of dairy cows improves dairy farming?

A. The system tells you when cows are ready for milking, saving time spent on monitoring the herd.

B. The system can sound alarms when cows roam into neighbouring paddocks.

C. The system notices the cows that are unwell, so they are treated quicker, which speeds up recovery time.

D. The system results in more milk from the cows' udders for each milking. => C

What does the 'things' in Internet of Things refer to?

A. Smart phones and tablets.

B. Machines and vehicles that operate themselves

C. A physical object with embedded electronics => C

The IoT increases the potential for machines to make smart decisions based on collected data, and to act on them, leaving people (apart from the original programmers and those setting the parameters) out of the loop. This is called M2M. Select an example of M2M from the descriptions below.

A. A sensor on a milking cow indicates that she is moving in a way that suggests she in on heat and will be receptive to insemination. She is placed on a watch list and the herd manager chooses to draught her out, after milking, for insemination.

B. An autonomous ambulance on an emergency call approaches an intersection and communicates with the signals to change the lights from red to green, to allow smooth passage through the intersection.

C. Sensors on a bridge detect strain in bridge joints. Areas of concern are flagged with the maintenance team who can respond to specific problems, rather than carrying out lengthy inspections. => B

What is the main advantage of IPv6, and why does it suit IoT?

A. IPv6 provides many more IP addresses, which increases the potential number of hosts and amount of data.

B. IPv6 is more up to date protocol with leaner mechanisms which suit modern microprocessors.

C. IPv6 is faster and can carry more data. => A

Which of these sentences could be a line of programming code?

A. If temperature is more than 30 degrees C, run fan, else, run heater

B. When it gets too hot, turn the fan on otherwise keep heating the room

C. Run heater until temperature reaches 30 degrees C then cool it down => A

Why will IoT put a strain on internet infrastructure?

A. The unprecedented amount of data

B. The variety of IoT protocols

C. The large number of unsecured devices connecting to the internet => A

Which of the following is NOT a security measure?

A. Encryption

B. Password

C. Firewall

D. Firmware => D

A DC motor requires a current of 10 Amperes to operate at full speed. The battery attached supplies 12 Volts. What resistance is required in the circuit to provide exactly 10 A to the motor?

A. 12 ohms

B. 120 ohms

C. 1.2 ohms => C

What type of device is the water valve? (sơ đồ)

A. Sensor

B. Actuator

C. Control

D. None of the above => B

In a communications network, peers can send messages to: (sơ đồ)

A. Peers in the same layer only

B. Peers in any layer

C. Peers in the layers above and below only => A

How can IoT help combat climate change?

A. Smart devices working to reduce energy use.

B. Prevention of methane release from cows.

C. Free internet in cities to help people operate in the city more easily.

D. Predictive maintenance of wind turbines, preventing burn out. => A

Smart cities use the Internet of Things to improve the quality of citizens' lives. True or False?

A. True

B. False => A

Sensors play a big part in the Internet of Things, collecting data from the physical world. There is a long and growing list of sensor types, but some of the more common ones are found in smart phones. Which sensor in your phone collects information on your physical activity for health apps?

A. Gyroscope

B. Magnetometer

C. Proximity sensor

D. Accelerometer => D

When the gate system at the dairy closes one gate and opens another to direct a cow into a particular area, what is (or what are) the actuators in play?

A. RF antennae detecting ID of cow

B. Light sensors detecting cow in gate

C. Pneumatic arms on gate mechanism

D. Movement sensor in cow's pendant => C

Which of these media is currently NOT used in communicating data?

A. Wireless / electromagnetic waves

B. Hydrogen cables / electron ionisation

C. Fibre optics / pulses of light

D. Copper cables / electrical signals => B

When you upload a photo from your camera to a social media site, what kind of path is the information likely to travel?

A. End device -> Modem -> Controller -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server

B. End device -> Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's server -> social media site's ISP

C. End device -> Controller -> Modem -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server

D. Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's ISP -> social media site's server -> End device => C

All of the parts of a complete IoT process need programming. But where in the following IoT process is programming needed for the system to be Internet of Things?

A. Soil sensor to microcontroller to the Cloud to microcontroller to fertilising mechanism

B. Soil sensor and Cloud and fertilising mechanism

C. Microcontroller and Cloud

D. Soil sensor and Microcontroller

E. Soil sensor and fertilising mechanism => C

What are the descriptors for Big Data? (as coined by IBM)

A. Speed, True, Diversity, Amount

B. Vast, Velocity, Variance, Verified

C. Volume, Velocity, Variety, Veracity => C

Which of the following functions does NOT apply to a typical data centre's services?

A. Data storage

B. Data management

C. Data analysis

D. Data security

E. Data generation => E

What data security concerns do IoT devices pose?

A. The device being hijacked to harm another device or system

B. Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption

C. The devices being small and embedded into objects makes them easily vandalised or stolen => B

The resistance of a heater coil is 10 Ohms and the input voltage is 120V. What is the current?

A. 12 amps

B. 1,200 amps

C. 0.083 amps => A

When current flows through a resistor, the power involved produces heat. What measures can be taken to reduce the generation of heat inside a computer?

A. Reduce the voltage from the power supply.

B. Increase the total resistive value in the circuit.

C. Increase the physical size of resistors.

D. Use capacitors on the output of the power supply.

E. All of the above. => A

The combination of a transducer with its signal conditioner is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ?

A. Instrumentation Amplifier

B. Sensor

C. Thermistor

D. ADC => B

The combination of conditioning plus the element being controlled by the computer is called a \_\_\_\_\_\_\_\_\_ ?

A. DAC

B. Instrumentation amplifier

C. Motor

D. Actuator => D

In the system above, what type of device is the outdoor camera? (sơ đồ)

A. Sensor

B. Actuator

C. Control

D. None of the above => A

What type of device is the 100K resistor? (sơ đồ)

A. Sensor

B. Actuator

C. Control

D. None of the above => D

What type of device is the garden light? (sơ đồ)

A. Sensor

B. Actuator

C. Control

D. None of the above => B

What type of device is the internet? (sơ đồ)

A. Sensor

B. Actuator

C. Control

D. None of the above => D

What type of device is the rain detector? (sơ đồ)

A. Sensor

B. Actuator

C. Control

D. None of the above => A

What type of devices are the relays? (sơ đồ)

A. Sensor

B. Actuator

C. Control

D. None of the above => B

What is another way of thinking of the DTE? (sơ đồ)

A. As a Modem

B. As a Computer

C. As a Router => B

Which of the following IS NOT criteria to help select a wired communication protocol?

A. Speed

B. Number of wires per connection

C. Ability to transmit and receive information at the same time

D. Number of devices that need connecting

E. Distance to the nearest power point

F. Maximum distance between master and slaves => F

Bluetooth uses low power radio waves in the frequency range of ...?

A. 2.4 - 2.485Hz

B. 2.4 - 2.485GHz

C. 2.4 - 2.485MHz => B

Bluetooth has three classes, namely:

A. Industrial, Scientific, Medical

B. Class 1, Class 2 and Class 3 (100m, 10m and 1m range)

C. I, M and R (Industrial, Mobile and Rarely used) => B

Bluetooth is named after:

A. The scientist who invented it, who had blue teeth

B. The company that invented it, Ericsson's founder Harald Bluetooth

C. Danish King, Harald Gormsson who promoted communication between Denmark and Norway => C

In an IoT smart home system, sensors are connected to the home power outlet and are required to process some part of the collected data. What would be the best option to connect sensors to each other, as well as a central location for Internet connection, where high data rate is required?

A. Bluetooth

B. 6LowPAN

C. WiFi

D. LoRa => C

Fill in the blank: System \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be a major problem, especially in badly designed closed-loop systems, as they may try to over-correct any errors which could cause the system to lose control and oscillate.

A. stability

B. scalability

C. security

D. useability

E. feedback => A

Which terminology deals with the excitation or stimulus applied to a system from an external source, for the generation of an output?

A. Input signal

B. Output signal

C. Error signal

D. Analogue signal

E. Feedback signal => A

One advantage of a closed loop feedback system is:

A. Simplicity of design

B. Ability to react to disturbances in the system

C. It is less stable than an open loop system

D. Depends on calibration for accuracy

E. All of the above => B

Bit resolution

Fill in the blank. If we want to measure the temperature of a solution in a chemical process to within 0.1 degree Celsius, over a range of 100 degrees, our development board would need a \_\_\_\_\_\_\_\_\_\_\_\_ converter to meet that requirement for accuracy.

A. 8 bit

B. 10 bit

C. 16 bit

D. 32 bit => B

Q1. Sensors play a big part in the Internet of Things, collecting data from the physical world. There is a long and growing list of sensor types, but some of the more common ones are found in smart phones. Which sensor in your phone collects information on your physical activity for health apps?

a. Gyroscope

b. Magnetometer

c. Proximity sensor

d. Acceleromete => d

Q2. In an industrial fan maintenance system, what physical change does Ian Howard say a sensor might detect, measure and transmit data on?

a. Vibration

b. Blade speed

c. Power

d. Wind direction => a

When the gate system at the dairy closes one gate and opens another to direct a cow into a particular area, what is (or what are) the actuators in play?

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b. Soil sensor and Cloud and fertilising mechanism

Microcontroller and Cloud

c. Soil sensor and Microcontroller

d. Soil sensor and fertilising mechanism => b

Which of these sentences could be a line of programming code?

a. If temperature is more than 30 degrees C, run fan, else, run heater

b. When it gets too hot, turn the fan on otherwise keep heating the room

c. Run heater until temperature reaches 30 degrees C then cool it down => a

Q8. Which of the following IS NOT criteria to help select a wired communication protocol?

a. Speed

b. Number of wires per connection

c. Ability to transmit and receive information at the same time

d. Number of devices that need connecting

e. Distance to the nearest power point

f. Maximum distance between master and slaves => e

Q7. What sort of actuator would you use to control the movement of a conveyor belt?

a. A linear actuator

b. An AC motor

c. A thermocouple

d. A water pump

e. A rubber belt => b

Q9. If we intend to include a servo motor as an actuator, what feature should we include when selecting a microcontroller?

a. Analogue to Digital converter

b. Digital to Analogue converter

c. GPIO pins

d. Pulse Width Modulation pin

e. I2C pins => d

Q12. Fill in the blank: System \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be a major problem, especially in badly designed closed-loop systems, as they may try to over-correct any errors which could cause the system to lose control and oscillate.

a. stability

b. scalability

c. security

d. useability

e. feedback => a

Q11. From the list below, which is the LPWAN technology?

a. LoRa

b. WiFi

c. LTE

d. 6LowPAN => a

Q10. In an IoT smart home system, sensors are connected to the home power outlet and are required to process some part of the collected data. What would be the best option to connect sensors to each other, as well as a central location for Internet connection, where high data rate is required?

a. Bluetooth

b. 6LowPAN

c. WiFi

d. LoRa => c

Q14. Fill in the blank. If we want to measure the temperature of a solution in a chemical process to within 0.1 degree Celsius, over a range of 100 degrees, our development board would need a \_\_\_\_\_\_\_\_\_\_\_\_ converter to meet that requirement for accuracy.

a. 8 bit

b. 10 bit

c. 16 bit

d. 32 bit => b

Q13. One advantage of a closed loop feedback system is:

a. Simplicity of design

b. Ability to react to disturbances in the system

c. It is less stable than an open loop system

d. Depends on calibration for accuracy

e. All of the above => b

Q15. \_\_\_\_\_\_\_\_ provide the means to create capability that reflects true awareness of the physical world and people.

a. Sensors

b. Heterogeneity

c. Security

d. Connectivity => a

Q16. \_\_\_\_\_\_\_\_ in IoT as one of the key characteristics, devices have different hardware platforms and networks.

a. Sensors

b. Heterogeneity

c. Security

d. Connectivity => b

Q19. What is the role of communication protocol in IoT?

a. Smart cities

b. Cyber physical system

c. Mac layer issue

d. Managing energy => c

Q17. IoT devices are naturally vulnerable to \_\_\_\_\_\_\_\_ threats.

a. Sensors

b. Heterogeneity

c. Security

d. Connectivity => c

Q20. Which of the following is the future application of IoT?

a. Role of green IoT system

b. QoS in communication

c. Secure communication

d. Multimedia communication => a

Q18. What is the popular method of organizing wireless network topologies?

a. Software

b. Synchronization

c. Network

d. Cluster => d

Q22. \_\_\_\_\_\_\_\_\_\_ layer is the communication layer that connects the IoT devices with WAN.

a. Internet layer

b. Application layer

c. Sensor layer

d. Network layer => d

Q21. The object of IoT will be empowered by \_\_\_\_\_\_\_\_\_\_\_

a. Network

b. Cloud

c. Devices

d. Connectivity => c

Q23. \_\_\_\_\_\_\_\_ either built into smoke alarm and thermostat or in the form of small plug - in.

a. Microphones

b. Loudspeaker

c. Microphone and loudspeaker

d. Mic => a

Q24. \_\_\_\_\_\_\_\_ Will reduces the cost of the devices.

a. Intuitive

b. Voice telephony

c. Voice recognition

d. Voice Integration => d

Q25. How many analog pins on an Arduino Uno board?

a. 5

b. 6

c. 7

d. 8 => b

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d. Use capacitors on the output of the power supply.

e. All of the above. => a

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b. C Languages

c. JAVA

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b. Sketch

c. Cryptography

d. Source code => b

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c. 16

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\_\_\_\_\_\_\_\_\_ board allows sewn into clothing.

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d. Mega => c

There is efficiency gains from \_\_\_\_\_\_\_\_ all sorts of equipment.

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d. Digitization => d

A provider which produces 99 percent uptime \_\_\_\_\_\_\_\_

a. Security issues

b. Network Issues

c. Programming issue

d. Memory issue => b

With physical security, the stakes are incredibly \_\_\_\_\_\_\_\_

a. Very high

b. Low

c. Very low

d. High => d

Which digit does the colour yellow denote on a resistor colour band?

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b. 4

c. 7

d. 3 => b

A 47 Kohm resistor would have which colours on its first three bands?

a. red, white, blue

b. yellow, violet, white

c. orange, yellow, violet

d. yellow, violet, orange => d

Which digit does the colour orange denote on a resistor colour band?

a. 9

b. 1

c. 6

d. 3 => d

A resistor's first three colour bands are red, yellow and black. What is its value?

a. 240 ohms

b. 24 ohms

c. 32 ohms

d. 420000 ohms => b

Which digit is represented by a blue band on a resistor?

a. 4

b. 8

c. 6

d. 9 => c

Which digit is represented by a black band on a resistor?

a. 100

b. 1

c. 1000

d. 0 => d

A resistor's first three colour bands are brown, green and red. What is its value?

a. 1500 ohms

b. 250 ohms

c. 2000 ohms

d. 510 ohms => d

Which colour represents the digit 6 in the resistor colour code?

a. red

b. blue

c. pink

d. green => b

Which of these colours is NOT used in the resistor value colour code?

a. black

b. turquoise

c. white

d. violet => b

A micro-controller is \_\_\_

a. small CPU made of transistors and conductors of heat and sound sensor

b. portable circuits capable of making other circuits

c. small computer on a single integrated circuit containing a processor core, memory, and programmable input/output peripherals

d. small chip made of silver => a

What does GPIO stand for?

a. General Purpose Inner Outer Propeller

b. General Purpose Interested Old People

c. General Purpose Input Output Pins

d. General Purpose Input Output Processor => c

Before your program "code" can be sent to the board, it needs to be converted into instructions that the board understands. This process is called\_\_\_

a. Stop

b. Create Sketch

c. Compile

d. Serial Monitor => c

This shows you what the IDE is currently doing and is also where error messages display if you make a mistake in typing your program. (often called a syntax error)

a. Sketch Editor

b. Text Console

c. Line Number

d. Serial Monitor => b

This shows you what line number your cursor is on. It is useful since the compiler gives error messages with a line number.

a. Sketch Editor

b. Text Console

c. Line Number

d. Serial Monitor => c

A function is a series of programming statements that can be called by name. Which command is called once when the program starts:

a. loop()

b. (output)

c. setup()

d. (input) => c

A function is a series of programming statements that can be called by name. Which command is called repetitively over and over again as long as the Arduino has power.

a. loop()

b. (output)

c. setup()

d. (input) => a

A function is a series of programming statements that can be called by name. Which command delays the LED by a number of milliseconds is.

a. loop()

b. delay()

c. setup()

d. stop() => b

What is this line of code: // the loop function runs over and over again forever

a. A statement

b. A single line comment

c. A function definition

d. A bowl of cereal => b

What is this line of code: // the loop function runs over and over again forever

a. A statement

b. A single line comment

c. A function definition

d. A bowl of cereal => b

What is this line of code: void loop() {

a. A statement

b. A single line comment

c. Part of a function definition

d. A banana => c

Which pin has a built-in LED?

a. Pin 13

b. Pin 10

c. Pin 8

d. Pin 7 => a

What are two two main types of Arduino pins?

a. Digital and analog.

b. Digital and modulation.

c. Pulse and analog. => a

If you make a voltage divider circuit with R1 = 10K and R2 = 10K, and your Vin is 12V, what will be your Vout?

a. 12V

b. 10V

c. 6V

d. 5V => c

How many bits are there in a byte?

a. 256

b. 8

c. 16

d. 10 => b

On a breadboard, where do you put a DIP package?

a. In the middle of the board

b. On the bottom side of the board

c. In the power rails

d. With the potato chips => a

What is the nominal voltage of 6 AAA batteries connected in parallel?

a. 6V

b. 9V

c. 12V

d. 1.5 V => d

This is an unsigned data type that occupies 1 byte of memory. Same as the byte datatype. It encodes numbers from 0 to 255.

a. highByte()

b. unsigned char

c. unsigned long

d. volatile => b

This is used to include outside libraries in your sketch. This gives the programmer access to a large group of standard C libraries (groups of pre-made functions), and also libraries written especially for Arduino.

a. #include

b. break

c. void

d. #define => a

This clears (writes a 0 to) a bit of a numeric variable.

a. bitClear

b. sizeof()

c. pinMode

d. #include => a

The void keyword is used only in function declarations. It indicates that the function is expected to return no information to the function from which it was called.

a. HIGH

b. void

c. pin

d. LOW => b

Q1. When you have a potential IoT idea you want to develop properly, what must you first define?

A. Its Unique Value Proposition

B. Problem it sets out to solve

C. Route to market

D. How it will work => d

Q2. Is it useful completing a business plan for a personal or in-house IoT product?

A. Yes

B. No => a

Q3. What is Fog computing?

A. It is a type of computing that enhances P2P applications.

B. It is a type of computing that sends controller data to a sensor.

C. It is a type of computing that disperses servers and services globally in distributed data centers.

D. It is a type of computing where services are hosted where they are used, such as at the network edge or with end devices. => d

Q4. What is an example of cloud computing?

A. A continuous interaction between people, processes, data, and things.

B. A service that offers on-demand access to shared resources.

C. A network infrastructure that spans a large geographic area.

D. An architectural style of the World Wide Web. => b

Q5. Which word or phrase most accurately sums up the main benefit of IoT technology?

A. Economies

B. Enhanced safety

C. Accuracy

D. Efficiencies

E. Energy use

F. Response time => d

Q6. How can IoT help combat climate change?

A. Smart devices working to reduce energy use.

B. Prevention of methane release from cows.

C. Free internet in cities to help people operate in the city more easily.

D. Predictive maintenance of wind turbines, preventing burn out. => a

Q7. Which of the following disruptions - caused by vehicles becoming fully autonomous - were the people surveyed most worried about?

A. Reduced private ownership of cars.

B. Less traffic lights on roads.

C. Reduced number of driving jobs.

D. Less space needed for parking.

E. Reduced vehicle emissions.

F. Which of the following disruptions - caused by vehicles becoming fully autonomous - were the people surveyed most worried about? => e

Q8. Smart cities use the Internet of Things to improve the quality of citizens' lives. True or False?

A. True

B. False => a

Q9. What are the descriptors for Big Data? (as coined by IBM)

A. Speed, True, Diversity, Amount

B. Vast, Velocity, Variance, Verified

C. Volume, Velocity, Variety, Veracity => c

Q10. Which of the following is one of the ways IoT monitoring of dairy cows improves dairy farming?

A. The system tells you when cows are ready for milking, saving time spent on monitoring the herd.

B. The system can sound alarms when cows roam into neighbouring paddocks.

C. The system notices the cows that are unwell, so they are treated quicker, which speeds up recovery time.

D. The system results in more milk from the cows' udders for each milking. => c

Q11. Which of the following functions does NOT apply to a typical data centre's services?

A. Data storage

B. Data management

C. Data analysis

D. Data security

E. Data generation => e

Q12. Which terminology deals with the excitation or stimulus applied to a system from an external source, for the generation of an output?

A. Input signal

B. Output signal

C. Error signal

D. Analogue signal

E. Feedback signal => a

Q13. Closed-loop Systems use feedback where a portion of the output signal is fed back to the input to reduce errors and improve stability.

A. True

B. False => a

Q14. Which challenge comes under IoT devices, reliable bidirectional signaling.

A. Signaling

B. Security

C. Presence detection

D. Power consumption => a

Q15. Which challenge comes under securing the information?

A. Signaling

B. Security

C. Presence detection

D. Power consumption => b

Q16. Which challenge comes under IoT devices, reliable bidirectional signaling.

A. Signaling

B. Security

C. Presence detection

D. Power consumption => a

Q17. Which challenge comes when we use many devices on the same network?

A. Signaling

B. Security

C. Presence detection

D. Power consumption => d

Q18. Which of the following issues are considered in IoT?

A. Security Issue

B. Reliablity Issue

C. Standard Issue

D. All issues => d

Q19. IoT is a paradigm that involves ubiquitous presence in the environment.

A. True

B. False => a

Q20. IIoT stands for \_\_\_\_\_\_\_\_\_\_

A. Industrial Internet of Things

B. Internet Internet of Things

C. Intelligence Internet of Things

D. Internal Internet of Things => a

Q21. Which possibility ensures load balancing and peak levelling of energy consumption?

A. Transportation and logistics

B. Energy and utilities

C. Automotive

D. Connected supply chain => b

Q22. Which possibility automatically communicates with other vehicles?

A. Transportation and logistics

B. Energy and utilities

C. Automotive

D. Connected supply chain => c

Q23. Which possibility connects the production line to suppliers?

A. Transportation and logistics

B. Energy and utilities

C. Automotive

D. Connected supply chain => d

Q24. Which possibility is highest contributor to cost overhead for manufacturing facilities?

A. Transportation and logistics

B. Energy and utilities

C. Plant control flow operation

D. Energy management and resource optimization => d

Q25. \_\_\_\_\_\_\_\_\_ will enable the humans to access, control and manage the operation.

A. IoT

B. Bigdata

C. Network

D. Communication => a

Q26. In \_\_\_\_\_\_\_\_\_ the embedded devices and objects working under IoT are resource constrained.

A. Health

B. Industry

C. Home

D. Information system => d

Q27. What type of networks is interacting under IoT?

A. Heterogeneous only

B. Homogeneous Only

C. Both hetero and homogeneous

D. Neither hetero nor Homo => a

Q28. Managing of resources can be done by implementing \_\_\_\_\_\_\_\_

A. Protocols

B. Algorithms

C. Networks

D. Protocols and algorithms => d

Q29. Resource management will elaborate the key aspects of \_\_\_\_\_\_\_\_\_

A. Industrial managements

B. Energy management

C. Network management

D. Information management => c

Q30. Which category finds an increase in applications targeting health and fitness?

A. Personal IoT

B. Group IoT

C. Community IoT

D. Industrial IoT => a

Q31. Which category is used in the context of connected cars?

A. Personal IoT

B. Group IoT

C. Community IoT

D. Industrial IoT => b

Q32. Which category could be used by citizens to contribute to a smart city?

A. Personal IoT

B. Group IoT

C. Community IoT

D. Industrial IoT => c

Q33. Which category is used for business to consumer process?

A. Personal IoT

B. Group IoT

C. Community IoT

D. Industrial IoT => d

Q34. Voice recognition software and virtual assistant programs offer for \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_

A. Communication

B. Communication and Entertainment

C. Entertainment

D. Communication and Software => d

Q35. \_\_\_\_\_\_\_\_\_ is particularly appealing when the human's hands or eye are otherwise occupied.

A. Voice recognition

B. Sound recognition

C. Amplitude recognition

D. Frequency recognition => a

Q36. Voice telephony is an efficient means of \_\_\_\_\_\_\_\_\_\_ with machines that can listen.

A. Mono-directional voice communication

B. Bi-directional voice communication

C. Voice recognition

D. Both bi directional and mono directional => b

Q37. Without \_\_\_\_\_\_\_\_\_\_\_ IoT devices can easily lead to catastrophe.

A. Software

B. Management system

C. Cloud

D. Devices => b

Q38. What IoT collects?

A. Human generated data

B. Sensor data

C. Machine generated data

D. Device data => a

Q39. Which requires data stream management?

A. Bigdata

B. IoT

C. Bigdata & IoT

D. Device data => b

Q40. The IoT operates at \_\_\_\_\_\_\_\_\_\_\_ scale.

A. Machine

B. Human

C. Device

D. Sensor => a

Secret-key encryption is also known as

A.Asymmetric encryption

B.Symmetric encryption

C.Secret-encryption

D.Private encryption => D.Private encryption

When you have a potential IoT idea you want to develop properly, what must you first define?

A.Its Unique Value Proposition

B.Problem it sets out to solve

C.Route to market

D.How it will work => B.Problem it sets out to solve

Is it useful completing a business plan for a personal or in-house IoT product?

A.Yes

B.No => A.Yes

What is Fog computing?

A.It is a type of computing that enhances P2P applications.

B.It is a type of computing that sends controller data to a sensor.

C.It is a type of computing that disperses servers and services globally in distributed data centers.

D.It is a type of computing where services are hosted where they are used, such as at the network edge or with end devices. => D.It is a type of computing where services are hosted where they are used, such as at the network edge or with end devices.

What is an example of cloud computing?

A.A continuous interaction between people, processes, data, and things.

B.A service that offers on-demand access to shared resources.

C.A network infrastructure that spans a large geographic area.

D.An architectural style of the World Wide Web. => B. A service that offers on-demand access to shared resources.

What is used to uniquely identify devices connected to the Internet?

A.gateway address

B.IP address

C.device name

D.URL => B.IP address

Which word or phrase most accurately sums up the main benefit of IoT technology?

A.Accuracy

B.Efficiencies

C.Energy use

D.Response time => B.Efficiencies

How can IoT help combat climate change?

A.Smart devices working to reduce energy use.

B.Prevention of methane release from cows.

C.Free internet in cities to help people operate in the city more easily.

D.Predictive maintenance of wind turbines, preventing burn out. => A.Smart devices working to reduce energy use.

Which of the following disruptions - caused by vehicles becoming fully autonomous - were the people surveyed most worried about?

A.Reduced private ownership of cars.

B.Less traffic lights on roads.

C.Reduced number of driving jobs.

D.Less space needed for parking.

E.Reduced vehicle emissions. => D.Less space needed for parking.

Smart cities use the Internet of Things to improve the quality of citizens' lives. True or False?

A.True

B.False => A.True

Which of the following is one of the ways IoT monitoring of dairy cows improves dairy farming?

A.The system tells you when cows are ready for milking, saving time spent on monitoring the herd.

B.The system can sound alarms when cows roam into neighbouring paddocks.

C.The system notices the cows that are unwell, so they are treated quicker, which speeds up recovery time.

D.The system results in more milk from the cows' udders for each milking. => C.The system notices the cows that are unwell, so they are treated quicker, which speeds up recovery time.

What are the descriptors for Big Data? (as coined by IBM)

A.Speed, True, Diversity, Amount

B.Vast, Velocity, Variance, Verified

C.Volume, Velocity, Variety, Veracity => C.Volume, Velocity, Variety, Veracity

Which of the following functions does NOT apply to a typical data centre's services?

A.Data storage

B.Data management

C.Data analysis

D.Data security

E.Data generation => E.Data generation

Which terminology deals with the excitation or stimulus applied to a system from an external source, for the generation of an output?

A.Input signal

B.Output signal

C.Error signal

D.Analogue signal

E.Feedback signal => A.Input signal

Closed-loop Systems use feedback where a portion of the output signal is fed back to the input to reduce errors and improve stability.

A.True

B.False => A.True

Which challenge comes under securing the information?

A.Signaling

B.Security

C.Presence detection

D.Power consumption => B.Security

Which challenge comes under IoT devices, reliable bidirectional signaling.

A.Signaling

B.Security

C.Presence detection

D.Power consumption => A.Signaling

Which challenge comes when we use many devices on the same network?

A.Signaling

B.Security

C.Presence detection

D.Power consumption => D.Power consumption

Which of the following issues are considered in IoT?

A.Security Issue

B.Reliablity Issue

C.Standard Issue

D.All issues => D.All issues

IoT is a paradigm that involves ubiquitous presence in the environment.

A.True

B.False => B.False

IoT stands for \_\_\_\_\_\_\_\_\_\_

A.Industrial Internet of Things

B.Internet Internet of Things

C.Intelligence Internet of Things

D.Internal Internet of Things => A.Industrial Internet of Things

Which possibility ensures load balancing and peak levelling of energy consumption?

A.Transportation and logistics

B.Energy and utilities

C.Automotive

D.Connected supply chain => B.Energy and utilities

Which possibility connects the production line to suppliers?

A.Transportation and logistics

B.Energy and utilities

C.Automotive

D.Connected supply chain => D.Connected supply chain

Which possibility is highest contributor to cost overhead for manufacturing facilities?

A.Transportation and logistics

B.Energy and utilities

C.Plant control flow operation

D.Energy management and resource optimization => D.Energy management and resource optimization

\_\_\_\_\_\_\_\_\_ will enable the humans to access, control and manage the operation.

A.IoT

B.Bigdata

C.Network

D.Communication => A.IoT

In \_\_\_\_\_\_\_\_\_ the embedded devices and objects working under IoT are resource constrained.

A.Health

B.Industry

C.Home

D.Information system => D.Information system

What type of networks is interacting under IoT?

A.Heterogeneous only

B.Homogeneous Only

C.Both hetero and homogeneous

D.Neither hetero nor Homo => A.Heterogeneous only

Managing of resources can be done by implementing \_\_\_\_\_\_\_\_

A.Protocols

B.Algorithms

C.Networks

D.Protocols and algorithms => D.Protocols and algorithms

Resource management will elaborate the key aspects of \_\_\_\_\_\_\_\_\_

A.Industrial managements

B.Energy management

C.Network management

D.Information management => C.Network management

Which category finds an increase in applications targeting health and fitness?

A.Personal IoT

B.Group IoT

C.Community IoT

D.Industrial IoT => A.Personal IoT

Which category is used in the context of connected cars?

A.Personal IoT

B.Group IoT

C.Community IoT

D.Industrial IoT => B.Group IoT

Which category could be used by citizens to contribute to a smart city?

A.Personal IoT

B.Group IoT

C.Community IoT

D.Industrial IoT => C.Community IoT

Which category is used for business to consumer process?

A.Personal IoT

B.Group IoT

C.Community IoT

D.Industrial IoT => D.Industrial IoT

Voice recognition software and virtual assistant programs offer for \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_

A.Communication

B.Communication and Entertainment

C.Entertainment

D.Communication and Software => B.Communication and Entertainment

\_\_\_\_\_\_\_\_\_ is particularly appealing when the human's hands or eye are otherwise occupied

A.Voice recognition

B.Sound recognition

C.Amplitude recognition

D.Frequency recognition => A.Voice recognition

Voice telephony is an efficient means of \_\_\_\_\_\_\_\_\_\_ with machines that can listen.

A.Mono-directional voice communication

B.Bi-directional voice communication

C.Voice recognition

D.Both bi directional and mono directional => B.Bi-directional voice communication

Without \_\_\_\_\_\_\_\_\_\_\_ IoT devices can easily lead to catastrophe.

A.Software

B.Management system

C.Cloud

D.Devices => B.Management system

What IoT collects?

A.Human generated data

B.Sensor data

C.Machine generated data

D.Device data => C.Machine generated data

Which requires data stream management?

A.Bigdata

B.IoT

C.Bigdata & IoT

D.Device data => B.IoT

The IoT operates at \_\_\_\_\_\_\_\_\_\_\_ scale

A.Machine

B.Human

C.Device

D.Sensor => A.Machine

Fritzing is open source, free software.

A.True

B.False => A.True

Which of these is NOT electronic equipment you can use for IoT prototyping?

A.Arduino microcontroller

B.Raspberry Pi microprocessor

C.Blackberry router

D.LED => C.Blackberry router

What does the 'things' in Internet of Things refer to?

A.Smart phones and tablets

B.Machines and vehicles that operate themselves

C.A physical object with embedded electronics => C.A physical object with embedded electronics

The IoT increases the potential for machines to make smart decisions based on collected data, and to act on them, leaving people (apart from the original programmers and those setting the parameters) out of the loop. This is called M2M. Select an example of M2M from the descriptions below.

A.A sensor on a milking cow indicates that she is moving in a way that suggests she in on heat and will be receptive to insemination. She is placed on a watch list and the herd manager chooses to draught her out, after milking, for insemination.

B.An autonomous ambulance on an emergency call approaches an intersection and communicates with the signals to change the lights from red to green, to allow smooth passage through the intersection.

C.Sensors on a bridge detect strain in bridge joints. Areas of concern are flagged with the maintenance team who can respond to specific problems, rather than carrying out lengthy inspections. => B.An autonomous ambulance on an emergency call approaches an intersection and communicates with the signals to change the lights from red to green, to allow smooth passage through the intersection.

What protocol is good for communication of IoT devices with restricted power and low data rates over a range of a few kilometres ?

A.Bluetooth

B.Zigbee

C.LoRaWAN

D.4G

E.WiFi => C.LoRaWAN

What is the main advantage of IPv6, and why does it suit IoT?

A.IPv6 provides many more IP addresses, which increases the potential number of hosts and amount of data.

B.IPv6 is more up to date protocol with leaner mechanisms which suit modern microprocessors.

C.IPv6 is faster and can carry more data. => A.IPv6 provides many more IP addresses, which increases the potential number of hosts and amount of data.

Which of these media is currently NOT used in communicating data?

A.Wireless / electromagnetic waves

B.Hydrogen cables / electron ionisation

C.Fibre optics / pulses of light

D.Copper cables / electrical signals => B.Hydrogen cables / electron ionisation

Communication in a network is carried via a \_\_\_\_\_\_\_\_\_ ?

A.Sensor

B.Router

C.Medium

D.Device

E.Controller => C.Medium

When you upload a photo from your camera to a social media site, what kind of path is the information likely to travel?

A.End device -> Modem -> Controller -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server

B.End device -> Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's server -> social media site's ISP

C.End device -> Controller -> Modem -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server

D.Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's ISP -> social media site's server -> End device => C.End device -> Controller -> Modem -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server

Why will IoT put a strain on internet infrastructure?

A.The unprecedented amount of data

B.The variety of IoT protocols

C.The large number of unsecured devices connecting to the internet => A.The unprecedented amount of data

Sometimes many devices share the same set of wires. This connection mode is referred to as a \_\_\_\_\_\_\_\_?

A.Train

B.Bus

C.Multi-point connection => B.Bus

In a communications network, peers can send messages to:

A.Peers in the same layer only

B.Peers in any layer

C.Peers in the layers above and below only => A.Peers in the same layer only

What is another way of thinking of the DTE?

A.As a Modem

B.As a Computer

C.As a Router => B.As a Computer

In telecommunications, RS-232 is used for \_\_\_\_\_\_\_communication transmission of data.

A.serial

B.parallel => A.serial

Bluetooth uses low power radio waves in the frequency range of ...?

A.2.4 - 2.485Hz

B.2.4 - 2.485GHz

C.2.4 - 2.485MHz => B.2.4 - 2.485GHz

Bluetooth has three classes, namely:

A.Industrial, Scientific, Medical

B.Class 1, Class 2 and Class 3 (100m, 10m and 1m range)

C.I, M and R (Industrial, Mobile and Rarely used) => B.Class 1, Class 2 and Class 3 (100m, 10m and 1m range)

Bluetooth is named after:

A.The scientist who invented it, who had blue teeth

B.The company that invented it, Ericsson's founder Harald Bluetooth

C.Danish King, Harald Gormsson who promoted communication between Denmark and Norway => C.Danish King, Harald Gormsson who promoted communication between Denmark and Norway

The huge numbers of devices connected to the Internet of things have to communicate automatically, not via humans. What is this called?

A.Bot to Bot (B2B)

B.Machine to Machine (M2M)

C.InterCloud

D.Skynet => B.Machine to Machine (M2M)

Which characteristics involve the facility the thing to respond in an intelligent way to a particular situation?

A.Intelligence

B.Connectivity

C.Dynamic Nature

D.Enormous Scale => A.Intelligence

\_\_\_\_\_\_\_\_ empowers IoT by bringing together everyday objects.

A.Intelligence

B.Connectivity

C.Dynamic Nature

D.Enormous Scale => B.Connectivity

The collection of data is achieved with \_\_\_\_\_\_\_\_ changes.

A.Intelligence

B.Connectivity

C.Dynamic Nature

D.Enormous Scale => C.Dynamic Nature

The number of devices that need to be managed and that communicate with each other will be much larger.

A.Intelligence

B.Connectivity

C.Dynamic Nature

D.Enormous Scale => D.Enormous Scale

\_\_\_\_\_\_\_\_ a cellular network is expensive, especially with many IoT devices.

A.Signaling

B.Security

C.Bandwidth

D.Power consumption => C.Bandwidth

Communication between \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_ is encrypted for security.

A.Cloud and device

B.End user and data center

C.Network and device

D.Cloud and Network => B.End user and data center

The embedded devices will form \_\_\_\_\_\_\_ network

A.ATM

B.Ethernet

C.FDDI

D.Ad-hoc => D.Ad-hoc

\_\_\_\_\_\_\_ are used to overcome the challenges of managing the resources of the IoT.

A.Clustering

B.Software agents

C.Synchronization techniques

D.Cluster, Software agent, and Synchronization techniques => D.Cluster, Software agent, and Synchronization techniques

BAN stands for \_\_\_\_\_\_\_\_

A.Body Area Network

B.Brain Area Network

C.Body Android Network

D.Brain Android Network => A.Body Area Network

NFC stands for \_\_\_\_\_\_\_\_

A.Near Fast Communication

B.Near Field Communication

C.Near Field Customer

D.Near Field Connection => B.Near Field Communication

Phones act as actuators too.

A.True

B.False => A.True

WiFi uses how much frequency?

A.2.2GHz

B.3GHz

C.3.5GHz

D.2.4GHz => D.2.4GHz

Bluetooth will transmit the data over the frequency band \_\_\_\_\_\_\_\_\_

A.2.4 to 2.7 GHz

B.2.4 to 3 GHz

C.2.4 to 2.485 GHz

D.2.4 to 2.6 GHz => C.2.4 to 2.485 GHz

Bluetooth operates at short distances.

A.True

B.False => A.True

Bluetooth will drain battery life.

A.True

B.False => A.True

What data security concerns do IoT devices pose?

A.The device being hijacked to harm another device or system

B.Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption

C.The devices being small and embedded into objects makes them easily vandalised or stolen => B.Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption

How does the addition of data due to IoT create privacy issues?

A.Systems struggle to deal with the large amount of data so data gets 'stuck outside security' waiting to be dealt with

B.Multiple data sets each stripped of identification initially can be combined as a whole and reveal identity

C.More data going through security measures inevitably means more security breakdowns and data leakage

D.IoT devices generally connect wirelessly creating additional harder to secure channels for data hijack => B.Multiple data sets each stripped of identification initially can be combined as a whole and reveal identity

Which of the following is NOT a security measure?

A.Encryption

B.Password

C.Firewall

D.Firmware => D.Firmware

How does fog computing reduce security risks?

A.It acts on IoT data closer to the source

B.It creates unclear connections that are difficult to intercept

C.It reduces the need for remote management

D.It scrambles electronic signals and encrypts all data => A.It acts on IoT data closer to the source

The resistance of a heater coil is 10 Ohms and the input voltage is 120V. What is the current?

A.12 amps

B.1,200 amps

C.0.083 amps => A.12 amps

A DC motor requires a current of 10 Amperes to operate at full speed. The battery attached supplies 12 Volts. What resistance is required in the circuit to provide exactly 10 A to the motor?

A.12 ohms

B.120 ohms

C.1.2 ohms => C.1.2 ohms

If you need to increase the current through a resistor in a circuit, what would you do?

A.Decrease the voltage applied to the resistor.

B.Increase the voltage applied to the resistor.

C.Increase the room temperature.

D.Increase the value of the resistor.

E.All of the above. => B.Increase the voltage applied to the resistor.

When current flows through a resistor, the power involved produces heat. What measures can be taken to reduce the generation of heat inside a computer?

A.Reduce the voltage from the power supply.

B.Increase the total resistive value in the circuit.

C.Increase the physical size of resistors.

D.Use capacitors on the output of the power supply.

E.All of the above. => A.Reduce the voltage from the power supply.

The combination of conditioning plus the element being controlled by the computer is called a \_\_\_\_\_\_\_\_\_ ?

A.DAC

B.Instrumentation amplifier

C.Motor

D.Actuator => D.Actuator

The combination of a transducer with its signal conditioner is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ?

A.Instrumentation Amplifier

B.Sensor

C.Thermistor

D.ADC => B.Sensor

What is the microcontroller used in Arduino UNO?

A.ATmega328p

B.ATmega2560

C.ATmega32114

D.AT91SAM3x8E => A.ATmega328p

What does p refer to in ATmega328p?

A.Production

B.Pico-Power

C.Power-Pico

D.Programmable on chip => B.Pico-Power

Arduino shields are also called as\_\_\_\_\_\_\_\_\_

A.Extra peripherals

B.Add on modules

C.Connectivity modules

D.Another Arduinos => B.Add on modules

Which is the software or a programming language used for controlling of Arduino?

A.Assembly Language

B.C Languages

C.JAVA

D.Any Language => D.Any Language

A program written with the IDE for Arduino is called \_\_\_\_\_\_\_\_\_

A.IDE source

B.Sketch

C.Cryptography

D.Source code => B.Sketch

Arduino IDE consists of 2 functions. What are they?

A.Build() and loop()

B.Setup() and build()

C.Setup() and loop()

D.Loop() and build() and setup() => C.Setup() and loop()

How many digital pins are there in the UNO board?

A.14

B.12

C.16

20 =>

\_\_\_\_\_\_\_\_\_ board allows sewn into clothing.

A.UNO

B.RedBoard

C.LilyPad

D.Mega => C.LilyPad

There is efficiency gains from \_\_\_\_\_\_\_\_ all sorts of equipment.

A.Implementation

B.Analogous

C.Evolution

D.Digitization => D.Digitization

A provider which produces 99 percent uptime \_\_\_\_\_\_\_\_

A.Security issues

B.Network Issues

C.Programming issue

D.Memory issue => B.Network Issues

With physical security, the stakes are incredibly \_\_\_\_\_\_\_\_

A.Very high

B.Low

C.Very low

D.High => D.High

Which digit does the colour yellow denote on a resistor colour band?

A.2

B.4

C.7

D.3 => B.4

A 47 Kohm resistor would have which colours on its first three bands?

A.red, white, blue

B.yellow, violet, white

C.orange, yellow, violet

D.yellow, violet, orange => D.yellow, violet, orange

Which digit does the colour orange denote on a resistor colour band?

A.9

B.1

C.6

D.3 => D.3

A resistor's first three colour bands are red, yellow and black. What is its value?

A.240 ohms

B.24 ohms

C.32 ohms

D.420000 ohms => B.24 ohms

Which digit is represented by a blue band on a resistor?

A.4

B.8

C.6

D.9 => C.6

Which digit is represented by a black band on a resistor?

A.100

B.1

C.1000

D.0 => D.0

A resistor's first three colour bands are brown, green and red. What is its value?

A.1500 ohms

B.250 ohms

C.2000 ohms

D.510 ohms => D.510 ohms

Which colour represents the digit 6 in the resistor colour code?

A.red

B.blue

C.pink

D.green => B.blue

Which of these colours is NOT used in the resistor value colour code?

A.black

B.turquoise

C.white

D.violet => B.turquoise

A micro-controller is...

A.small CPU made of transistors and conductors of heat and sound sensor

B.portable circuits capable of making other circuits

C.small computer on a single integrated circuit containing a processor core, memory, and programmable input/output peripherals

D.small chip made of silver => A.small CPU made of transistors and conductors of heat and sound sensor

What does GPIO stand for?

A.General Purpose Inner Outer Propeller

B.General Purpose Interested Old People

C.General Purpose Input Output Pins

D.General Purpose Input Output Processor => C.General Purpose Input Output Pins

Before your program "code" can be sent to the board, it needs to be converted into instructions that the board understands. This process is called...

A.Stop

B.Create Sketch

C.Compile

D.Serial Monitor => C.Compile

This shows you what the IDE is currently doing and is also where error messages display if you make a mistake in typing your program. (often called a syntax error)

A.Sketch Editor

B.Text Console

C.Line Number

D.Serial Monitor => B.Text Console

This shows you what line number your cursor is on. It is useful since the compiler gives error messages with a line number.

A.Sketch Editor

B.Text Console

C.Line Number

D.Serial Monitor => C.Line Number

A function is a series of programming statements that can be called by name. Which command is called once when the program starts:

A.loop()

B.(output)

C.setup()

D.(input) => C.setup()

A function is a series of programming statements that can be called by name. Which command is called repetitively over and over again as long as the Arduino has power.

A.loop()

B.(output)

C.setup()

D.(input) => A.loop()

A function is a series of programming statements that can be called by name. Which command delays the LED by a number of milliseconds is.

A.loop()

B.delay()

C.setup()

D.stop() => B.delay()

What is this line of code: // the loop function runs over and over again forever

A.A statement

B.A single line comment

C.A function definition

D.A bowl of cereal => B.A single line comment

What is this line of code: void loop() {

A.A statement

B.A single line comment

C.Part of a function definition

D.A banana => C.Part of a function definition

Which pin has a built-in LED?

A.Pin 13

B.Pin 10

C.Pin 8

D.Pin 7 => A.Pin 13

What are two two main types of Arduino pins?

A.Digital and analog.

B.Digital and modulation.

C.Pulse and analog. => A.Digital and analog.

If you make a voltage divider circuit with R1 = 10K and R2 = 10K, and your Vin is 12V, what will be your Vout?

A.12V

B.10V

C.6V

D.5V => C.6V

How many bits are there in a byte?

A.256

B.8

C.16

D.10 => B.8

On a breadboard, where do you put a DIP package?

A.In the middle of the board

B.On the bottom side of the board

C.In the power rails

D.With the potato chips => A.In the middle of the board

What is the nominal voltage of 6 AAA batteries connected in parallel?

A.6V

B.9V

C.12V

D.1.5V => D.1.5V

This is an unsigned data type that occupies 1 byte of memory. Same as the byte datatype. It encodes numbers from 0 to 255.

A.highByte()

B.unsigned char

C.unsigned long

D.volatile => B.unsigned char

This is used to include outside libraries in your sketch. This gives the programmer access to a large group of standard C libraries (groups of pre-made functions), and also libraries written especially for Arduino.

A.#include

B.break

C.void

D.#define => A.#include

This clears (writes a 0 to) a bit of a numeric variable.

A.bitClear

B.sizeof()

C.pinMode

D.#include => A.bitClear

The void keyword is used only in function declarations. It indicates that the function is expected to return no information to the function from which it was called.

A.HIGH

B.void

C.pin

D.LOW => B.void

Sensors play a big part in the Internet of Things, collecting data from the physical world. There is a long and growing list of sensor types, but some of the more common ones are found in smart phones. Which sensor in your phone collects information on your physical activity for health apps?

A.Gyroscope

B.Magnetometer

C.Proximity sensor

D.Accelerometer => D.Accelerometer

In an industrial fan maintenance system, what physical change does Ian Howard say a sensor might detect, measure and transmit data on?

A.Vibration

B.Blade speed

C.Power

D.Wind direction => D.Wind direction

When the gate system at the dairy closes one gate and opens another to direct a cow into a particular area, what is (or what are) the actuators in play?

A.RF antennae detecting ID of cow

B.Light sensors detecting cow in gate

C.Pneumatic arms on gate mechanism

D.Movement sensor in cow's pendant => C.Pneumatic arms on gate mechanism

All of the parts of a complete IoT process need programming. But where in the following IoT process is programming needed for the system to be Internet of Things?

A.Soil sensor to microcontroller to the Cloud to microcontroller to fertilising mechanism

B.Soil sensor and Cloud and fertilising mechanism

C.Microcontroller and Cloud

D.Soil sensor and Microcontroller

E.Soil sensor and fertilising mechanism => C.Microcontroller and Cloud

Which of these sentences could be a line of programming code?

A.If temperature is more than 30 degrees C, run fan, else, run heater

B.When it gets too hot, turn the fan on otherwise keep heating the room

C.Run heater until temperature reaches 30 degrees C then cool it down => A.If temperature is more than 30 degrees C, run fan, else, run heater

In the reticulation (water irrigation) system, what type of device is the outdoor camera?

A.Sensor

B.Actuator

C.Control

D.none of the above => A.Sensor

What sort of actuator would you use to control the movement of a conveyor belt?

A.A linear actuator

B.An AC motor

C.A thermocouple

D.A water pump

E.A rubber belt => B.An AC motor

Which of the following IS NOT criteria to help select a wired communication protocol?

A.Speed

B.Number of wires per connection

C.Ability to transmit and receive information at the same time

D.Number of devices that need connecting

E.Distance to the nearest power point

F.Maximum distance between master and slaves => F.Maximum distance between master and slaves

If we intend to include a servo motor as an actuator, what feature should we include when selecting a microcontroller?

A.Analogue to Digital converter

B.Digital to Analogue converter

C.GPIO pins

D.Pulse Width Modulation pin

E.I2C pins => C.GPIO pins

In an IoT smart home system, sensors are connected to the home power outlet and are required to process some part of the collected data. What would be the best option to connect sensors to each other, as well as a central location for Internet connection, where high data rate is required?

A.Bluetooth

B.6LowPAN

C.WiFi

D.LoRa => C.WiFi

From the list below, which is the LPWAN technology?

A.LoRa

B.WiFi

C.LTE

D.6LowPAN => A.LoRa

Fill in the blank: System \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be a major problem, especially in badly designed closed-loop systems, as they may try to over-correct any errors which could cause the system to lose control and oscillate.

A.stability

B.scalability

C.security

D.useability

E.feedback => A.stability

One advantage of a closed loop feedback system is:

A.Simplicity of design

B.Ability to react to disturbances in the system

C.It is less stable than an open loop system

D.Depends on calibration for accuracy

E.All of the above => B.Ability to react to disturbances in the system

Fill in the blank. If we want to measure the temperature of a solution in a chemical process to within 0.1 degree Celsius, over a range of 100 degrees, our development board would need a \_\_\_\_\_\_\_\_\_\_\_\_ converter to meet that requirement for accuracy.

A.8 bit

B.10 bit

C.16 bit

D.32 bit => B.10 bit

\_\_\_\_\_\_\_\_ provide the means to create capability that reflects true awareness of the physical world and people.

A.Sensors

B.Heterogeneity

C.Security

D.Connectivity => A.Sensors

\_\_\_\_\_\_\_\_ in IoT as one of the key characteristics, devices have different hardware platforms and networks.

A.Sensors

B.Heterogeneity

C.Security

D.Connectivity => B.Heterogeneity

IoT devices are naturally vulnerable to \_\_\_\_\_\_\_\_ threats.

A.Sensors

B.Heterogeneity

C.Security

D.Connectivity => C.Security

What is the popular method of organizing wireless network topologies?

A.Software

B.Synchronization

C.Network

D.Cluster => D.Cluster

What is the role of communication protocol in IoT?

A.Smart cities

B.Cyber physical system

C.Mac layer issue

D.Managing energy => C.Mac layer issue

Which of the following is the future application of IoT?

A.Role of green IoT system

B.QoS in communication

C.Secure communication

D.Multimedia communication => A.Role of green IoT system

The object of IoT will be empowered by \_\_\_\_\_\_\_\_\_\_\_

A.Network

B.Cloud

C.Devices

D.Connectivity => C.Devices

\_\_\_\_\_\_\_\_\_\_ layer is the communication layer that connects the IoT devices with WAN.

A.Internet layer

B.Application layer

C.Sensor layer

D.Network layer => D.Network layer

\_\_\_\_\_\_\_\_ either built into smoke alarm and thermostat or in the form of small plug - in.

A.Microphones

B.Loudspeaker

C.Microphone and loudspeaker

D.Mic => A.Microphones

\_\_\_\_\_\_\_\_ Will reduces the cost of the devices.

A.Intuitive

B.Voice telephony

C.Voice recognition

D.Voice Integration => D.Voice Integration

How many analog pins on an Arduino Uno board?

A.5

B.6

C.7

D.8 => B.6

Which of the following function is used to set any pin in the state of HIGH/LOW ?

A.digitalRead

B.digitalWrite

C.analogWrite

D.pinMode => B.digitalWrite

What does PWM stand for?

A.Pulse Width Modulation

B.Pulse Wide Module

C.Preventive Width Modulation

D.None of the other => A.Pulse Width Modulation

Which function in the Arduino IDE is used to set any pin in output or input state?

A.digitalWrite

B.delay

C.pinMode

D.analogRead => C.pinMode

How many PWM pins are present in the Arduino UNO?

A.1

B.3

C.6

D.9 => C.6

What among the following is an example of external interrupt for the Arduino?

A.Button

B.Resistor

C.LED

D.Capacitor => A.Button

What will be the correct syntax to make a digital pin (say D2) as an output pin?

A.pinMode(2,output)

B.pinMode(2,Output)

C.pinMode(2,OUTPUT)

D.pinmode(2,OUTPUT) => C.pinMode(2,OUTPUT)

Which of the following digital pins can be used in Arduino Nano/Uno to give interrupt?

A.D2

B.D6

C.D4,D5

D.D2,D3 => D.D2,D3

What is the size of EEPROM of the Arduino UNO?

A.1 KB

B.2 KB

C.4 KB

D.8 KB => A.1 KB

Which function in the Arduino is used to start the serial communication using the COM port?

A.Serial.available()

B.Serial.begin()

C.serial.begin()

D.setup() => B.Serial.begin()

The action that will be performed using this switch case will be:switch (2): {case 1: digitalWrite(11,HIGH); case 2: analogRead(A3)}

A.D11 will become HIGH

B.Analog value of A3 will be read

C.D11 will become LOW

D.None of the other => B.Analog value of A3 will be read

While taking the input from the user in Arduino, which of these function is used in Sketch?

A.Serial.print

B.Serial.println

C.Serial.available

D.None of the other => C.Serial.available

What is the Tinkercad Circuits?

A.Its a just s software to create games

B.Tinkercad is a free online collection of software tools that help people create and simulation circuits.

C.Its a software for playing and create games.

D.None of the other => B.Tinkercad is a free online collection of software tools that help people create and simulation circuits.

How do you zoom in on Tinkercad?

A.Spacebar

B.Use the arrows on the keyboard

C.Use the scroll wheel

D.Right Click => C.Use the scroll wheel

A photoresistor is an electronic component whose electrical resistance \_\_\_\_\_\_\_ when it is exposed to light.

A.changes

B.increases

C.doesn't change => A.changes

What does this syntax mean? myservo.attach(9)

A.Connect the control wire 9 to GND pin

B.Connect the control wire for 9 seconds

C.Connect the control wire to 9 volts

D.Connect the control wire to digital pin 9 => D.Connect the control wire to digital pin 9

In remote control terms, IR stands for what?

A.indirect radio

B.infrared

C.inside remote

D.instant reception => B.infrared

Infrared remote controls use what to carry signals between the remote control and the device it controls?

A.radio waves

B.sound

C.light => C.light

Infrared signals can be used for \_\_\_\_\_\_.

A.(a) long-range communication

B.(b) short-range communication

C.Both (a) and (b)

D.None of the other => B.(b) short-range communication

Which sensor is LM35?

A.Pressure sensor

B.Humidity sensor

C.Temperature sensor

D.Touch sensor => C.Temperature sensor

LM35 provides \_\_\_\_\_\_\_ Volt for each degree count?

A.1

B.0.01

C.0.001

D.10 => B.0.01

What is the main purpose of the SRF05 sensor?

A.Water level sensor

B.Sound intensity sensor

C.Ranging sensor

D.Temperature sensor => C.Ranging sensor

What is the purpose of the pin named ECHO of HC-SR04 sensor?

A.Allows the ultrasonic sound wave to be sent from the sensor.

B.Provides the information that the ultrasonic sound wave is returned.

C.Allows the sensor to be fed with energy.

D.Provides the chassis connection of the sensor. => B.Provides the information that the ultrasonic sound wave is returned.

What does the AREF pin on the Arduino UNO?

A.Used to trigger a interrupt.

B.Reference voltage for analog inputs.

C.To reset the microcontroller.

D.Provides 8-bit PWM signal. => B.Reference voltage for analog inputs.

What pins can the Arduino UNO board communicate with the computer?

A.PWM pins

B.ADC pins

C.I2C pins

D.UART pins => D.UART pins

What case is called serialEvent() interrupt?

A.Serial port shuts down.

B.When data is sent from the serial port.

C.When data comes from the serial port.

D.When the voltage is applied to the Arduino. => C.When data comes from the serial port.

Each computer has its own Internet search engine.

A.True

B.False => B.False

What does CRM stand for?

A.Customer Research Management

B.Customer Relationship Management

C.Customized Research Management

D.Customer Research Metrics => B.Customer Relationship Management

How has e-commerce revolutionized business?

A.It has allowed businesses to utilize new avenues of advertising, selling, and distribution.

B.It attempts to level the playing field.

C.It transcends geographic boundaries.

D.All of the above => D.All of the above

A \_\_\_\_\_ allows customers to continue browsing after selecting each item they wish to purchase

A.Shopping Cart

B.Forms-based interface

C.SSL connection

D.Virtual memory => A.Shopping Cart

Which of the following is NOT a standard used in E-Commerce?

A.EDI

B.XML

C.SETI

D.X12 => C.SETI

Which of the following is NOT the characteristics of consumer when studying about EC Consumer Behavior Model?

A.Age

B.Gender

C.E-mail

D.Education => C.E-mail

Mechanism to protect private networks from outside attack is

A.Firewall

B.Antivirus

C.Digital signature

D.Formatting => A.Firewall

While making payment using electronic check, credit and debit cards, the server authenticates the customers and verifies with the bank that funds are adequate before purchase

A.True

B.False => A.True

A computer communication technology that provides a way to interconnect multiple computer across short distance is

A.LAN

B.WAN

C.MAN

D.Wireless network => A.LAN

DNS is

A.The distributed hierarchical naming system

B.The vertical naming system

C.The horizontal naming system

D.The client server system => C.The horizontal naming system

Which of the following is a technology constraint from the e-commerce macro-environment?

A.Propensity for consumers to purchase online.

B.Opt-in to e-mail required to avoid SPAM

C.Likelihood of fraudulent transactions

D.Taxation at source of purchase => C.Likelihood of fraudulent transactions

In E-Commerce, HTTPS is a communication protocol that uses

A.Public key encryption

B.Secret key encryption

C.Private key encryption

D.Data key encryption => A.Public key encryption

The concept of electronic cash is to execute payment by

A.Credit Card

B.ATM Card

C.Using computers over network

D.Cheque => C.Using computers over network

A chemical manufacturer has transactions that are predominantly:

A.business to consumer.

B.consumer to consumer.

C.consumer to business

D.business to business => C.consumer to business.

A B2B reverse auction is:

A.the same as a seller auction.

B.intended to reduce the price by increasing competition from suppliers.

C.always run through a B2B marketplace.

D.both the second and third answers above. => B.intended to reduce the price by increasing competition from suppliers.

A computer system that permits multiple users to run programs at same time

A.Real time system

B.Multi programming system

C.Time sharing system

D.Multi tasking system => D.Multi tasking system

The mercantile process model consists of the following phase(s):

A.The pre-purchase phase

B.Purchase consummation phase

C.Post-purchase Interaction phase

D.All of the above => D.All of the above

The most serious disadvantage of e-auctions is:

A.the risk of fraud.

B.Logistics.

C.unreliable auction software.

D.payment delays. => A.the risk of fraud.

Many companies use intermediaries or trading assistants instead of implementing e-auctions themselves for each of the following reasons EXCEPT:

A.The company name is not widely recognized.

B.To bring many more buyers to the auction.

C.To avoid tax and legal fees.

D.Costs of auction intermediaries or assistants are less than the costs of physical auctions. => C.To avoid tax and legal fees.

All of the following are potential benefits from auctions to sellers EXCEPT:

A.auctions can broaden the customer base and reduce cycle time.

B.sellers receive valuable price sensitivity information.

C.sellers are always anonymous.

D.sellers can liquidate large quantities of obsolete items very quickly. => C.sellers are always anonymous.

Select the correct answer from the choices below which is corresponding with the following statement in STRATEGIC PLANNING TOOLS" : It is a methodology that surveys external opportunities and threats and relates them to internal strengths and weaknesses.

A.SWOT analysis

B.strategy map

C.balanced scorecard

D.BCG matrix => A.SWOT analysis

A major shortcoming with authentication services is:

A.two different authenticators may come up with different opinions regarding the authenticity and description of a given item.

B.it is impossible to tell whether many items are reproductions or genuine.

C.dishonest authenticators are the primary sources of fraud on the Internet.

D.most auction sites forbid the use of authentication services. => A.two different authenticators may come up with different opinions regarding the authenticity and description of a given item.

\_\_\_\_\_ work best with many buyers and many sellers.

A.Bartering

B.Dynamic exchanges

C.Forward auctions

D.Reverse auctions => A.Bartering

The services provided through location-based m-commerce focus on key factors which include all of the following EXCEPT:

A.Geocaching, or determining the topography of an area.

B.Navigation, or plotting a route from one location to another.

C.Tracking, or monitoring the movement of a person or thing.

D.Timing, or determining the precise time at a specific location => A.Geocaching, or determining the topography of an area.

Infrastructures that "support" the wireless connection are:

A.network access points, mobile communications server switches, and cellular transmitters and receivers.

B.WAP gateways, GPS locators, and GPS satellites.

C.PDAs, smartphones, and portable computers.

D.web servers, mobile devices, and microbrowsers. => A.network access points, mobile communications server switches, and cellular transmitters and receivers.

A \_\_\_\_\_\_ is suitable for mobile users who need to make very short-range device-to-device wireless connections within a small space, such as a single room, and most commonly with Bluetooth.

A.personal area network

B.local area network

C.wireless area network

D.metropilitan area network => A.personal area network

You are walking near a coffee shop and suddenly your cell phone beeps with a message: "Come inside and get a free biscotti with any purchase." This is an example of:

A.permission marketing

B.location-based advertising

C.customer relationship management

D.m-commerce => C.customer relationship management

One way to share information with supply chain partners is wireless \_\_\_\_\_\_\_\_\_, which is the science of measuring physical phenomena such as temperature, volume, or an on/off condition at a remote point and transmitting the value to a distant recorder or observer

A.RFID

B.mobilization

C.osmosis

D.telemetry => D.telemetry

WiMax and 3G wireless mobile technologies offer telemedicine application opportunities that include all of the following EXCEPT:

A.Reduced threat of malpractice suits because there is no hands-on interaction between the remote physician and the patient.

B.Prescriptions can be transferred electronically to the appropriate pharmacy for a no-wait pick-up by the patient.

C.Real-time consultation between a patient in one location and a medical specialist in another.

D.Wearable heart monitors linked to a cell phone can automatically contact doctors or family members at the first sign of health problems. => A.Reduced threat of malpractice suits because there is no hands-on interaction between the remote physician and the patient.

All of the following about RFID are true EXCEPT:

A.An RFID tag can hold 20 times the amount of information a bar code can hold, and the tag can be read through cardboard, wood, and plastic at a range of up to 100 feet

B.An RFID tag includes an antenna and a chip with information about the item

C.An RFID reader contains a radio transmitter and receiver

D.An RFID tag remains inactive until radio frequency energy from the tag's radio transmitter hits its antenna, giving the chip enough power to emit a 96-bit string of information => A.An RFID tag can hold 20 times the amount of information a bar code can hold, and the tag can be read through cardboard, wood, and plastic at a range of up to 100 feet

Digital Signature is

A.Scanned Signature on Computer

B.Code number of the sender

C.Public Key Encryption

D.Software to recognize signature => D.Software to recognize signature

The method(s) of payment for online consumers are

A.Electronic cash

B.Credit/debit

C.Electronic checks

D.All of the above => D.All of the above

Which of the following statements are INCORRECT about company-centric marketplaces?

A.They are marketplaces which focus on a single company's purchasing needs or selling needs.

B.They are generally public entities owned by that company.

C.They support for buying needs (many to one, or buy-side).

D.They support for selling needs (one to many, or sell-side). => B.They are generally public entities owned by that company.

As in e-commerce, m-commerce B2C applications are concentrated in each of the following areas EXCEPT:

A.retail shopping for products and services

B.telecommunications

C.targeted advertising

D.providing content for a fee through mobile portals => B.telecommunications

All of the following about wireless wide area networks (WWAN) are true EXCEPT:

A.The single WWAN network standard insures compatibility of handsets within and between countries.

B.Most WWANs are cellular phone networks.

C.At the center of each cell is a base station transceiver or cell tower that is used to send and receive signals to and from mobile devices operating within the cell.

D.When a device is turned on, a SIM card inside the device identifies itself to the WWAN. => A.The single WWAN network standard insures compatibility of handsets within and between countries.

Which of the following is an example of edutainment?

A.Two or more students sharing music over the Internet

B.An online science fiction game whose object is to blast as many aliens as possible in a 60 second round

C.A community college providing an online college course on digital media

D.An online game that uses colorful characters to teach young children about numbers => D.An online game that uses colorful characters to teach young children about numbers

Which of the following statements about blogs is not true?

A.A blog is a personal Web site, open to the public, in which the owner expresses his or her feelings or opinions.

B.Blogs became very popular after the September 11, 2001 terrorist attacks when people were looking for as many sources of information as possible and for personal connections to the tragedy.

C.Blogs are limited to one-way communication.

D.The most common types of blogs are professional blogs. => C.Blogs are limited to one-way communication.

P2P systems have all of the following key characteristics EXCEPT:

A.They provide for real-time access to other users through techniques such as instant messaging and multichannel collaboration applications.

B.The users' computers can act as both clients and servers.

C.The overall system is well integrated, but lacks tools for easy creation of content or for adding functionalities.

D.They support cross-networking protocols such as SOAP or XML-RPC, which enables a program on one computer to execute a program on a server computer. => C.The overall system is well integrated, but lacks tools for easy creation of content or for adding functionalities.

More and more people are willing to pay for digital music, as shown by the success of \_\_\_\_\_\_\_\_.

A.Napster

B.Kazaa

C.Apple's iTunes

D.P2P => C.Apple's iTunes

All of the following are examples of e-government EXCEPT:

A.a company sells army and navy surplus supplies at auction over the Internet.

B.a contractor submits an application for a building permit using a city hall Web site.

C.an unemployed worker consults a Web site operated by the state employment department to learn about job openings in his city.

D.a state purchasing officer places an online order for office supplies from an e-catalog sent to her by a national office supply store. => A.a company sells army and navy surplus supplies at auction over the Internet.

A(n) \_\_\_\_\_ is a computer system capable of integrating, storing, editing, analyzing, sharing, and displaying spatial information.

A.geographical information system

B.global positioning system

C.l-commerce system

D.on-star system => A.geographical information system

Which of the following statements about blogs is not true?

A.A blog is a personal Web site, open to the public, in which the owner expresses his or her feelings or opinions

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D.They support cross-networking protocols such as SOAP or XML-RPC, which enables a program on one computer to execute a program on a server computer => A.They provide for real-time access to other users through techniques such as instant messaging and multichannel collaboration applications

The tasks of KM include each of the following EXCEPT:

A.creating knowledge repositories where knowledge can be stored and retrieved easily

B.enhancing a knowledge environment in order to conduct more effective knowledge creation, transfer, and use

C.restricting knowledge access to prevent its transfer between individuals

D.managing knowledge as an asset so as to increase the effective use of knowledge assets over time => C.restricting knowledge access to prevent its transfer between individuals

\_\_\_\_\_\_\_ involves using various computer-based tools and techniques to analyze transaction data and generate new ideas

A.Knowledge creation

B.Knowledge capture

C.Knowledge classification

D.Knowledge management => A.Knowledge creation

Most universities use e-learning:

A.exclusively in reaching students who couldn't otherwise attend classes.

B.only when forced by administrators to use it as a way to recruit distant students or reduce costs.

C.as a total replacement for traditional classrooms.

D.as a supplementary channel to traditional classrooms. => D.as a supplementary channel to traditional classrooms.

One initiative underway that could lead to widespread support for the introduction of RFID is the \_\_\_\_\_, which identifies the manufacturer, producer, version, and serial number of each item and does not require line-of-sight contact to be read.

A.Electronic Product Code

B.Universal Product Code

C.Smart Product Network

D.Sensor Network => A.Electronic Product Code

Wal-Mart and Levi Strauss collaborate on demand forecasting in order to optimize the flow of materials along the supply chain. This is an example of:

A.reducing design cycle time

B.APS (Advanced Planning and Scheduling)

C.CPFR (Collaborative Planning, Forecasting and Replenishment)

D.reducing product development time => C.CPFR (Collaborative Planning, Forecasting and Replenishment)

A major block in the widespread implementation of collaborative commerce is:

A.the theory of collaborative commerce hasn't been proven effective in real-world applications.

B.the technology needed isn't available.

C.collaborative commerce is extremely expensive.

D.the lack of universally accepted standards. => D.the lack of universally accepted standards.

When you have a potential IoT idea you want to develop properly, what must you first define?

A.Its Unique Value Proposition

B.Problem it sets out to solve

C.Route to market

D.How it will work => B.Problem it sets out to solve

What is used to uniquely identify devices connected to the Internet?

A.gateway address

B.IP address

C.device name

D.URL => B.IP address

What data security concerns do IoT devices pose?

A.The device being hijacked to harm another device or system

B.Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption

C.The devices being small and embedded into objects makes them easily vandalised or stolen

=> B.Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption

The resistor that changes resistance based on how much light it receives is called a \_\_\_\_\_\_\_\_\_ resistor. => photo

What do you have to consider when creating a circuit with multiple LEDs? => each LED has to be connected by a separate jumper wire into a different pin.

What does the command below stand for?

delay(5000); => wait 5 seconds

How many volts can an Arduino take as recommended? => 6 to 17 volts

Assuming that you just plug in the Arduino for the first time of the day, before you can upload your program to an Arduino, you must first... => go to tools and select port

This line sets pin 3 to be OUTPUT => pinMode(3, OUTPUT);

Why does the LED have different length legs? => to indicate which side is negative and which side is positive

Choose the correct command to start the Serial communication

serialBegin(9600)

serial.Begin(9600)

Serial.Begin(9600)

Serial.begin(9600) => Serial.begin(9600)

Which part of the circuit does Ohms Law measure? => resistor

The pinMode() function configures a pin as either \_\_\_\_\_\_or \_\_\_\_\_\_ => input or output

What does the command below do?

digitalWrite(13, LOW); => turns the lights connected to pin 13 off

Look at the code below:

digitalWrite(5, HIGH);

delay(1000);

digitalWrite(5, LOW);

delay(1000);

Which pin is the jumper wire connected to? => 5

How many ground pins are there on the Arduino board? => 3

Look at the code below:

void setup()

{

pinMode(13, OUTPUT);

}

void loop()

{

digitalWrite(13, HIGH); delay(1000);

digitalWrite(13, LOW); delay(1000);

}

Which means 5V or on? => HIGH

What is the purpose of a breadboard? => to prototype circuits

What is an LED? => Light Emitting Diode

A servo is => output

Which command line declares myservo as an input? => pinMode(myservo, INPUT);

We use \_\_\_\_ to end the entire program. => curly bracket }

You use analogWrite(pin, value) for analog pins. What is the value range of these pins? => 0 - 1023

A potentiometer is also known as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ => variable resistor

Before they are used, variables have to be \_\_\_\_\_\_\_\_\_\_\_\_ => declared

How many analog ports does an Arduino have? => six, A0-A5

How do you save a file (sketch)? => go to file, click save or save as, type in a name, and then press save

True or False :

The analogWrite() function works on PWM pins 3, 5, 6, 9, 10, and 11 and all pins labeled A0 through A5 => true

To change the font size of text of the Arduino program Editor, you go to => file then preferences

Comments are notes to => you and people reading your source code

Are all jumper wires the same? => no, they have different connecting ends for different connecting choices

Why is a resistor important? => it controls the flow of electricity by opposing it to a certain amount

What is an electrical circuit? => an electrical loop with a starting point and an ending point

There are a row of pinheads labeled 3.3 V and 5 V. What does the V stand for? => volts

Look at the code below:

void setup()

{

pinMode(13, OUTPUT);

}

void loop()

{

digitalWrite(13, HIGH); delay(1000);

digitalWrite(13, LOW); delay(1000);

}

Which statement do you change to alter the time? => delay

Look at the code below:

digitalWrite(13, HIGH);

delay(3000);

digitalWrite(13, LOW);

delay(2000);

What happens to the LED? => it stays on for three seconds

Which command line lights up an LED on pin 13? => digitalWrite(LED, HIGH);

Which command code pauses the program for the amount of time (in milliseconds) => delay

Which of these requires an analog input?

potentiometer

LED

servo

photo resistor => all except LED

Look at the code below:

digitalWrite(13, HIGH);

delay(1000);

digitalWrite(13, LOW);

delay(1000);

How long is the LED on? => 1 second

The work area where you code and upload it to an Arduino is called => integrated development environment

Is a servo a type of motor for electronics? => yes

pinMode sets the pin to be => INPUT or OUTPUT

what does this line do?

digitalWrite(led, LOW); => turns off the LED plugged into pin 13

What would happen if we used the following code but the wire was not plugged into pin 13?

digitalWrite(13, HIGH);

delay(1000);

digitalWrite(13, LOW);

delay(1000); => the LED would not light up

Which command line reads from a potentiometer? => val=analogRead(A0);

The void loop() function does precisely what its name suggests, and loops \_\_\_\_and \_\_\_\_\_\_, => over and over

Which symbol ends a statement? => semicolon ;

We can compare Arduino to which part of human body? => brain

Look at the code below:

void setup()

{

pinMode(13, OUTPUT);

}

void loop()

{

digitalWrite(13, HIGH); delay(1000);

digitalWrite(13, LOW); delay(1000);

}

Which means keep going forever? => void loop

True or False? You can have a space in the name of your program or sketch. => false

true or false

PWM pins can accept analogWrite command. => true

Look at the code below:

void setup()

{

pinMode(13, OUTPUT);

}

void loop()

{

digitalWrite(13, HIGH); delay(1000);

digitalWrite(13, LOW); delay(1000);

}

Which means Ground or Off? => LOW

In the void setup()...The setup function will only run\_\_\_\_\_. => once

Variables are usually declared right before\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ => void setup

A vacuum cleaner has a maximum power consumption of 1000 W and is powered by 240 Volts. What is the current used? => 4.17 amps

Fill in the blank: System \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be a major problem, especially in badly designed closed-loop systems, as they may try to over-correct any errors which could cause the system to lose control and oscillate. => stability

What type of device is the garden light? => Actuator

What type of device is the door alarm? => Actuator

What sort of actuator would you use to control the movement of a conveyor belt? => An AC Motor

A DC motor requires a current of 10 Amperes to operate at full speed. The battery attached supplies 12 Volts. What resistance is required in the circuit to provide exactly 10 A to the motor? => 1.2ohms

Bluetooth is named after: => Danish King, Harald Gormsson who promoted communication between Denmark and Norway

When current flows through a resistor, the power involved produces heat. What measures can be taken to reduce the generation of heat inside a computer? => Reduce the voltage from the power supply.

Which terminology deals with the excitation or stimulus applied to a system from an external source, for the generation of an output? => Input signal

One advantage of a closed loop feedback system is: => Simplicity of design

The resistance of a heater coil is 10 Ohms and the input voltage is 120V. What is the current? => 12 amps

What type of device is the 100K resistor? => None of the above

If we intend to include a servo motor as an actuator, what feature should we include when selecting a microcontroller? => Pulse Width Modulation pin

Sometimes many devices share the same set of wires. This connection mode is referred to as a => Bus

In an IoT smart home system, sensors are connected to the home power outlet and are required to process some part of the collected data. What would be the best option to connect sensors to each other, as well as a central location for Internet connection, where high data rate is required? => LoRa

In the following system, what type of device is the outdoor camera? => Sensor

Fill in the blank. If we want to measure the temperature of a solution in a chemical process to within 0.1 degree Celsius, over a range of 100 degrees, our development board would need a \_\_\_\_\_\_\_\_\_\_\_\_ converter to meet that requirement for accuracy. => 10 bit

Bluetooth uses low power radio waves in the frequency range of ...? => 2.4 - 2.485GHz

In a communications network, peers can send messages to => Peers in the same layer only

What is another way of thinking of the DTE(Data Terminal Equipment)? => As a Computer

Bluetooth has three classes, namely: => Class 1, Class 2 and Class 3 (100m, 10m and 1m range)

If you need to increase the current through a resistor in a circuit, what would you do? => Increase the voltage applied to the resistor.

The combination of a transducer with its signal conditioner is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ? => Sensor

The combination of conditioning plus the element being controlled by the computer is called a \_\_\_\_\_\_\_\_\_ ? => Actuator

What type of device is the moisture detector? => Sensor

Which of the following IS NOT criteria to help select a wired communication protocol? => Distance to the nearest power point

The Line tracking sensor is based on...

1)-

2)-

3)- => 1) Transmitting a signal in the form of infrared radiation.

2) Receiving infrared signals.

3) A change in electrical resistance when sensing a different color.

The sensitivity of the line tracking module can be adjusted by? => Adjusting the potentiometer on the sensor.

The KY-033 line tracking module can be used to ?

1)

2)

3) => 1) Follow a line

2) Stay inside a line

3) Detect different colors

The commands that can be used to read the output of the KY-033 line tracking module are? => digitalRead() or analogRead()

Which of the following statements regarding the servo pins is(are) correct?

a) Brown line for signal, red for power supply and orange for GND.

b) Brown line for GND, red for power supply and orange for signal.

c) Brown line for GND, red for signal and orange for power supply. => B

Which of the following are specifications of servo motor SG90 are correct ?

a) The rotation angle ranges 0 - 180°.

b) It has a reference circuit that produces a basic voltage.

c) The rotation angle ranges 0 - 360° .

d) It has three controlling lines. => A, B, and C are correct.

In lab 7 If an obstacle is detected, the first response that the car does should be? => fully stop

A pulse width of 1.5 ms gives an angle of.... => 90 degrees

Which two pins does the Servo library support for servos? => 9 and 10

Which of the following application(s) would use Ultrasonic sensor modules?

A) Robot obstacle avoidance.

B) Parking lot testing.

C) Public security.

D) Object testing distance. => All of the above

Which of the following statement(s) is(are) true regarding Ultrasonic sensor technical parameters?

A) Static current is less than 2 mA.

B) Level output is higher than 5 V.

C) Detection angle is not greater than 15 degrees.

D) Detection distance ranges from 2 cm to 450 cm. => All of the above

Which of the following statement(s) is(are) true regarding the read() function in the Servo library?

A) Read the supplied voltage from the servo.

B) Read the period of the PWM signal controlling the servo.

C) Read the current angle of the servo.

D) Read the supplied current of the servo. => C) Read the current angle of the servo.

Which of the following statement(s) is(are) true regarding the write() function in the Servo library?

A) Write a value (in radians) to the servo to control the shaft accordingly.

B) Write a value (in degrees) to the servo to control the shaft accordingly.

C) Write a value (in milliseconds) to the servo to control the shaft accordingly => B) Write a value (in degrees) to the servo to control the shaft accordingly.

The function of the L298N motor driving board is.... => drive the motor to rotate.

According to the pin assignment in the table of page 14 in "Make the car move.pdf", the following code is to make the motor move (assuming that the state of ENA is HIGH) \_\_\_\_.

digitalWrite(IN1, LOW);

digitalWrite(IN2, HIGH); => forward

According to the pin assignment in "Make the car move.pdf", what does the following code do?

digitalWrite(ENA,HIGH);

digitalWrite(ENB,HIGH);

digitalWrite(in1,HIGH);

digitalWrite(in2,LOW);

digitalWrite(in3,LOW);

digitalWrite(in4,HIGH); => Turn the car to the right.

According to the pin assignment in "Make the car move.pdf", what does the following code do?

digitalWrite(ENA, HIGH);

digitalWrite(ENB, HIGH);

digitalWrite(IN1, LOW);

digitalWrite(IN2, HIGH);

digitalWrite(IN3, LOW);

digitalWrite(IN4, HIGH); => Move the car forward.

The advantage(s) of using functions is(are) to.... => 1) make the code more readable.

2) help the programmer stay organized.

3) make the whole sketch smaller and more compact.

4) reduces chances for errors in modification.

What will be the reading of the voltmeter in the following circuit? (The positive lead of the voltmeter connected to R1) => 9V

Which one of the following statement(s) is(are) true?

A) The equivalent resistance of parallel-connected resistors is smaller than each individual resistance.

B) KCL is always applied to a node.

C) KVL is always applied to a loop.

D) The equivalent resistance of series-connected resistors is greater than each individual resistance . => All of the above

Which of the following is(are) recommended when building circuits on a breadboard?

A) Draw a detailed wiring diagram before building the circuit on the breadboard.

B) Set up the specified voltage on a power supply before connecting it to the circuit.

C) Use wires with the same color.

D) Keep the wires as short as possible. => A, B, and C

Which of the following statement(s) is(are) true regarding PWM?

A) All pins on an Arduino board can produce PWM signals.

B) Function "analogRead()" of an Arduino board is used to generate PWM signals.

C) The pulse width means the duration of "on" time of a digital signal.

D) PWM is a technique for getting analog results with digital means. => C, and D

Which of the following statement(s) is(are) true regarding function analogWrite?

A) The duty cycle of the analogWrite function is between 0 and 255.

B) The analogWrite function has nothing to do with the analog pins or the analogRead function.

C) The voltage value provided by the analogWrite function is between 0 and 5 V.

D) The syntax is analogWrite(pin, value). => All of the above

Consider two resistors, R1 = 5 and R2 = 10. The two resistors when connected in series, have an equivalent resistance R\_{series} R s e r i e s and when connected in parallel, have an equivalent resistance R\_{Parallel} R P a r a l l e l . Indicate all true statements.

A) R2> R\_parallel

B) R\_Series> R\_parallel

C) R1> R\_parallel

D) R\_series>R1 => All of the above

What is the valid voltage of an LED? => 2V

Statement " Serial.begin(9600) " does what ? => opens serial port, sets data rate to 9600 bits per second.

A Light Emitting Diode can be forward biased by ..... => connecting the shorter lead to the negative terminal of the battery.

For an LED to light brightly it is recommended to have about 10 mA of current flowing through it. For a circuit consisting of a 12V DC, a resistor R, and properly biased LED, the value of R should be (Assume a voltage drop of 2 V across the diode) => 1K Ohm

The outputting current of the Arduino UNO/Mega board is? => 20mA

The correct method of supplying power to the Arduino UNO are.... => 1) Connecting a 7-12 V external power supply to pin Vin.

2) Connecting a USB from a computer to the Arduino UNO

Which of the following statement(s) is(are) true for Arduino UNO?

A) It has a clock speed of 16 MHz.

B) It has a 32 KB of flash memory.

C) It has 14 digital input/output pins and 6 analog input pins.

D) It uses an ATmega brand of microcontrollers => All of the above

Which of the following statement(s) is(are) TRUE for the pins of Arduino?

A) Analog pins A0 to A5 can be used as both input and output portals.

B) Digital pins can be used as both input and output portals.

C) The ground pins on the board are connected.

D) Pin 13 attaches to an on-board LED (light emitting diode). => All of the above

Which of the following statement(s) is(are) true for function pinMode():

A) It is used to specify the pin to behave either as an input or an output.

B) The syntax is pinMode(pinNumber, mode).

C) The pin number should be an integer data type.

D) The pinMode() function should be placed in setup() function. => All of the above

Which of the following statement(s) is(are) TRUE for function digitalWrite():

A) There is no return value of this function.

B) The pinMode() function should be placed in setup() function.

C) The syntax is digitalWrite(pinNumber, value, time).

D) it is used to read a HIGH or a LOW value from a digital pin. => A)There is no return value of this function.

B) The pinMode() function should be placed in setup() function.

Which of the following statement(s) is(are) for functions setup() and loop()?

A) setup() function runs once during start up and this is where you can initialize the variables.

B) loop() function is optional function and can be skipped.

C) loop() function runs repeatedly regardless of the elapsed time.

D) setup() function is optional and can be skipped. => A, and C

A resistor has the following bands in the order of: Red, Red, Black, and Gold. The resistance

is => 22 Ohms

Which of the following statement(s) about multimeters is(are) true?

A) The red input jack has to be plugged into the hole based on the type/resolution of measurements (e.g., volts, amps, and ohms).

B) The dial (rotary switch) needs to be switched to the region corresponding to measurements (e.g., volts, amps, and ohms).

C)The black input jack always goes to the "COM" hole.

D) Multimeters can be broken if the dial (rotary switch) is switched to a wrong region. => All of the above

An ammeter measures current owing through a resistor and a voltmeter measures voltage

across the resistor. Which statements are true?

A) Ammeter should be connected in parallel with the resistance

B) Ammeter should be connected in series with the resistance

C) Voltmeter should be connected in parallel with the resistance

D) Voltmeter should be connected in series with the resistance => B, and C

In a circuit with only a single resistor of 220 ohms, if we apply a DC power with 5V, the

reading of the current measurement should be approximately => 23 mA

Name two of the city issues that Barcelona is addressing with IoT solutions (select two)

a. Graffiti

b. Traffic

c. Litter

d. Pollution

e. Safe streets

f. Urban sprawl => b,e

Real time data provided by connected 'things' leads to streamlining of services, which makes Barcelona economically, environmentally and even socially more sustainable. How is this sustainability manifested in Barcelona's street lights? (select 3)

a. Saves energy and therefore money, making the lights environmentally and economically more sustainable.

b. Light colour changes to match the city's mood, which contributes to social sustainability.

c. Optimising maintenance reduces costs from labour and parts, creating economical sustainability.

d. Lighting the streets at night for safety is a factor in social sustainability.

e. Lights providing WiFi hot spots provide connectivity, contributing to economic and social sustainability.

f. Lights providing surveillance of waste bins create environmental and economic sustainability, due to bins only being emptied when they need to be. => a,c,d

What innovation did Coen van Oostrom's company add to 'The Edge' building in Amsterdam that gave the building the extra innovation points required to make it the world's most sustainable building?

a. Air quality sensors.

b. Solar panels that share surplus power with the building next door.

c. LED lights powered by Ethernet cable.

d. Sensors that notify cleaners about what needs cleaning and when. => c

What was the driving problem that Coen van Oostrom wanted to address by adding technology to the buildings his company was designing and building?

a. Coen met American politician and environmentalist Al Gore who had told him that businesses would be the drivers of change and Coen wanted his business to drive change.

b. His company wanted to build the most sustainable building in the world.

c. Coen wanted to reduce the carbon emissions that contribute to climate change, as 35% of carbon emissions come from buildings.

d. He wanted employees to have better conditions in the workplace, including cleaner air and facilities. => c

When all cars can drive themselves, and talk to each other and the road infrastructure, what will be the result? (select 5)

a. Increased road rage

b. Efficient travel time

c. Energy savings

d. Reduction in road accidents

e. Increased number of intersections with traffic lights

f. Increased mobility for elderly and disabled people

g. Traffic grid lock

h. Better air quality from reduced emissions => b,c,d,f,h

What challenges and barriers need to be overcome to progress to a citywide autonomous travel infrastructure? (select 3)

a. Governments, technology companies and car manufacturers agreeing on common ways of doing things

b. Robust security systems that prevent the infrastructure from being easily hacked and grinding to a halt

c. The public's perception of the technology

d. Affordability of the technology

e. Development of the technology => a,b,c

What benefits for blind people will come with autonomous vehicles, as pointed out by Scott Hollier? (select 2)

a. Reduced coordination to go somewhere leading to increased independence

b. Spending more time travelling by vehicle

c. Unrestrained in choice of where to live

d. A vehicle that caters for their disabilities so they can drive the vehicle. => a,c

Why is Sydney Harbour Bridge being monitored with IoT technology?

a. To count the trucks and other vehicular traffic using the bridge.

b. To see how it is dealing with the increased freight loads and traffic volumes.

c. To measure the loudness of the bridge's voice => b

How many sensors are on Sydney Harbour Bridge?

a. 320

b. 3,200

c. 2,300

d. 23,000 => b

What are the sensors on the Sydney Harbour Bridge detecting?

a. Pressure changes

b. Vibrations

c. Road surface wear

d. Heat change => b

What connects the sensors to where the data is collected and collated?

a. WiFi

b. RF (Radio Frequency)

c. Fibre Optics => c

How has the IoT system in Malcolm Hayes's dairy made a difference? (select 2)

a. Cows are being managed better

b. Cows aren't getting sick

c. Reduced labour required

d. Know one cow from another => a,c

How can placing sensors on the leg of a patient with foot drop help them? (select 2)

a. Analysis of their gait for better diagnosis and treatment

b. Easier and more economical method of detecting the condition

c. Provides portable treatment directly to muscles => a,b

What is predictive maintenance and why is it 'smarter'?

a. The normal working life of a part is figured out and maintenance is scheduled for before the time it is likely to fail, preventing interruptive and costly failure.

b. Equipment is monitored by embedded sensors, so signs of wear and need for maintenance are picked up and maintenance is planned only when needed, saving time and resources.

c. Sensors on the equipment trigger self-maintenance procedures in the equipment. e.g. oil release => b

Sensors detect change in a physical environment. What can get monitored by sensors in a mining truck ? (Select all that apply)

a. Fuel level

b. Tyre pressure

c. Oil levels

d. Engine temperature

e. Battery charge

f. Coolant level

g. Speed

h. Driver alertness => a,b,c,d,e,f,g,h

What is the primary benefit (efficiency) of monitoring these physical states remotely?

a. Predictive maintenance reduces truck down time

b. Check up on poor staff performance

c. Collaboration between different sites => a

What sensoring systems employed are for safety benefits? (Select 3)

a. Gas monitoring systems for gas detection

b. RFID tags on people and machinery underground

c. Collaboration between remote sites

d. Video cameras monitoring driver alertness

e. Vehicle monitoring for remote scheduling

f. Security camera monitoring => a,b,d

What type of sensor does the dairy cow wear? (Select 2)

a. Barometer

b. ID sensor

c. Proximity sensor

d. Motion detector

e. Pressure detector => b,d

What is the response to a cow being more active?

a. Separate out that cow's milk and feed it to the calves

b. Draught out, check the graphs and inseminate that cow

c. Draught out the cow for checking on her health

d. Feed that cow more grain when she comes in for milking => b

What information does the monitoring of Malcolm's dairy herd give him and his manager that makes the running of the dairy more efficient? (Select 3)

a. Individual milk production

b. Early detection of mastitis events through conductivity monitoring

c. If a cow is not eating pasture

d. If a cow is lying down because it is raining

e. If a cow has strayed from the herd => a,b,c

What are the sensors in the drop foot gait project measuring, and therefore detecting?

a. Raising of foot from the ground, and therefore foot drag incidence.

b. The distance the patient moves forward, and therefore a patient's ability to walk.

c. Comparison of movement in different parts of the limb, and therefore foot drop incidence. => c

Shiva is using inertial measurement units, which is a type of sensor that incorporates three measuring devices. What are those three devices? (Select three)

a. Magnetometer

b. Barometer

c. Gyroscope

d. Inclinometer

e. Accelerometer

f. Gravimeter => a,c,e

Ian Howard draws attention to what an embedded sensor needs to make it a useful thing. What three things does he list? (Select three)

a. On/Off switch

b. Means to digitise signature

c. All weather protection

d. Able to communicate sensor information to web

e. Power supply

f. Visible display panel => b,d,e

What is the main sensor being used by Kip, Curtin University's autonomous bus?

a. Accelerometer

b. LIDAR

c. GPS

d. Stereo camera => b

Find the humidity sensor and look at its specifications. What is its feature? (i.e. what does it measure?)

a. Detects humidity and temperature

b. Detects the humidity level in the air

c. Detects the temperature of the water in the air => b

If the analog output value of the humidity sensor is 128, what percentage is the humidity?

a. 50%

b. 89%

c. 128% => a

Actuators in an 'ordinary' (non-IoT) home

Which of the following ordinary home objects use an artificial actuator? (Select three)

a. Kettle

b. Light

c. Fork

d. Door

e. Washing machine

f. Vacuum cleaner => a,e,f

Actuators in a multi-purpose farm

Which of the following multi-purpose farm objects use an artificial actuator? (Select two)

a. Tractor

b. Irrigation

c. Feeding Trough

d. Gate

e. Spade

f. Boots => a,b

Many other factors - aside from connectivity range and data rate - differentiate the various protocols suitable for IoT.

Select two from the list below that did NOT come up in the article.

a. Low latency

b. Scalability

c. Power consumption

d. Data quantity

e. Frequency band

f. Secureness

g. Operating noise level

h. Robustness

i. Reliability

j. Existing infrastructure

k. Number of devices supported

l. Cost

m. Standby time

n. Colour => g,n

Where in the IoT process is there specific programming? Select the two correct answers.

a. Instructing Arduino hardware

b. Sending data to cloud service

c. Cleaning and filtering data then interpreting .csv file to signals (graphical read out)

d. Signal analysis generating report for medical practitioner => a,c

What programming languages are used in this project and why are those languages used? Select the two correct answers.

a. Arduino software because using Arduino microcontroller

b. C++ for high level (computer independent) programming

c. MATLAB for its signal processing

d. Javascript for the web application => a,c

How is the foot drop abnormal walking gait identified from the signal produced?

a. If foot is not lifting during gait cycle get a strong positive and negative signal during cycle

b. If foot is not lifting during gait cycle get a negative signal but no positive signal during cycle

c. If foot is not lifting during gait cycle get a strong positive but no negative signal during cycle => c

According to a survey of developers done by Eclipse Foundation - what are the top 4 languages for building IoT solutions?

a. Assembly

b. B#

c. C

d. C++

e. Java

f. Javascript

g. Python

h. Rust => c,e,f,g

What are the 3 major sections of IoT architectural environment? (where programming is required to manage data)

a. Cell tower collecting data from mobile devices

b. Centralised servers where data ends up

c. Internet router through which data passes

d. Sensors generating data

e. Gateways or hubs organising data => b,d,e

Which three functions does the Pawsey Centre look after for it's partners?

a. Supercomputing

b. Data; storage, analytics, management

c. Geo-thermal cooling

d. Converting radio waves from Universe to digital signals

e. Visualisation => a,b,e

Complete this quote: 'Making data valuable means making it \_\_\_\_\_\_'.

a. Digital

b. Organised

c. Available

d. Big => c

The Pawsey Centre has one super-computer dedicated to the SKA Pathfinder, in order to...?

a. Process the large amounts of data in real time

b. Store the large amounts of data from the telescope for later analysis

c. Keep the data separate from the geoscience data => a

To which two places does the data from a fault finding sensor in a car go?

a. Directly to a webpage at the dealership

b. To the car's computer (diagnostics) triggering an alert on the dashboard

c. To a diagnostic bus then a gateway before being sent to the manufacturer and dealer responsible for the car

d. To the driver's mobile phone

e. To the traffic monitoring system on the road => b,c

What is the use of historic data collected from thousands of cars?

a. Customers can have the fault efficiently dealt with

b. Dealers can better market the cars

c. Manufacturers can improve design and manufacturing => c

What are the two uses of the real time fault alert data from cars?

a. Manufacturer can improve design and manufacturing

b. Dealer (service centre) can order parts ahead and send out suitable booking

c. Customer can have a fault efficiently dealt with

d. Dealer can use this feature to better market the cars => b,c

What data function does the gateway in the car perform?

a. Identifies when the car has reached home and opens the gate

b. Integrates and sorts data and sends relevant data to manufacturer and/or dealer

c. Receives the data from all of the car sensors => b

As defined by IBM, what are the six different categories of cloud computing?

a. Software as a service (SaaS)

b. Public Cloud

c. Storage Cloud

d. Platform as a service (PaaS)

e. Networking as a service (NaaS)

f. Public access private cloud

g. Infrastructure as a service (IaaS)

h. Private Cloud

i. Hybrid Cloud

j. Data as a service (DaaS) => a,b,d,g,h,i

Meola's article cites a survey of 200 IoT project managers in 2015 by Portstream, Dimensional Research.

If 'too much data to analyse effectively' was the most mentioned challenge faced in collecting and analysing data, what was the second most often-cited challenge?

a. We're not sure what questions to ask

b. Data is analysed too slowly to be actionable

c. Difficult to capture useful data

d. Analysis tools aren't flexible enough to ask the questions we want => c

What is Fog computing?

a. The part of cloud computing where data with uncertain origins is kept

b. Gathering and processing of data at local computing devices

c. Cloud computing for Big Data => b

What sort of data may be collected from people (with or without their knowledge) through IoT? Select all that apply.

a. Personal information

b. Locations and movements

c. Habits

d. Physical conditions

e. Thoughts => a,b,c,d

Why can personal data be valuable to others? Select all that apply.

a. Sales and Marketing

b. Services planning

c. Health intervention

d. Credit decisions

e. Insurance decisions

f. Employment decisions

g. Fraud and theft => a,b,c,d,e,f,g

Good product development practice involves developers:

• conducting a privacy and security risk assessment;

• building security into the product from the outset;

• testing the security measures before launching;

• using a service provider capable of providing security; and

• monitoring a product through its life cycle.

What other recommendations are there around IoT development, due to additional privacy and security risks? Check all that apply.

a. Minimise the data collected and retained, and the length of time data is retained

b. Consider who should have access to data (at the appropriate level in an organisation)

c. Calculate the value of the data and insure against loss

d. Educate employees about good security practices => a,b,d

The FTC report refers to Fair Information Practice Principles, or FIPPs. Which 4 FIPPs were focused on?

a. Notice (consumer being given notice of practice)

b. Choice (consumer having control over how data is used)

c. Access (consumers' ability to view the data collected)

d. Accuracy (consumers' collected data being accurate, and consumers' ability to contest accuracy)

e. Data minimisation

f. Security (consumers' held data being accurate and secure)

g. Accountability => a,b,e,f

What vulnerability did the researchers exploit to hack the defibrillator?

a. That it was worn by a person with a heart defect.

b. That it could be communicated with wirelessly.

c. That it was very small and could not support complex software. => b

How did the researchers take charge of a car?

a. Via its radio and internal wireless network.

b. Via its steering column.

c. Via its axle and wheels. => a

What vulnerability with P25 radios did the researchers use to listen in to law enforcement information?

a. Public access frequency.

b. Insecure methods of communication.

c. An alternative frequency on the radio.

d. User interface easily allowed users not to encrypt. => d

What did the researchers use to 'record' keystrokes?

a. A web camera

b. The Accelerometer in a smart phone and machine learning

c. A USB stick in a port of the computer => b

What were Avi Rubin's two main messages to developers? Select both.

a. Developers need to think of security at the beginning.

b. Don't leave your phone unattended.

c. Anything with software in it is vulnerable.

d. A car is highly computerised and connected by a wired network. => a,c

What is the smart product Handisco, and for whom was it developed?

a. A smart navigational device for city tourists

b. A smart assistant for blind people

c. A smart traffic light changer for emergency crews => b

What is the primary aim of this smart product?

a. To help blind people achieve more in the city

b. To help tourists stay safe and know where to go in the city

c. To help blind people cross the road safely => a

What networking protocol does Handisco utilise?

a. Wifi

b. Bluetooth

c. Zigbee

d. 4G => b

What did Handisco do to enable them to take their product through the innovation phases?

a. Made a prototype and got it endorsed by a blind person

b. Formed a company and gave the product a name

c. Entered and won a Cisco competition to earn seed money and mentoring => c

What does Scott Hollier consider to be the three major issues with IoT?

a. Assistive technology, interoperability and affordability

b. Privacy, security and interoperability

c. Standards, security and covering all disabilities => b

What is 'interoperability'?

a. The ability of a control panel to operate multiple devices simultaneously

b. The ability of one technology system to interfere with or hijack another system

c. The ability of different software and technology to communicate => c

Which word or phrase most accurately sums up the main benefit of IoT technology?

a. Economies

b. Enhanced safety

c. Accuracy

d. Efficiencies

e. Energy use

f. Response time => d

How can IoT help combat climate change?

a. Smart devices working to reduce energy use.

b. Prevention of methane release from cows.

c. Free internet in cities to help people operate in the city more easily.

d. Predictive maintenance of wind turbines, preventing burn out. => a

Which of the following disruptions - caused by vehicles becoming fully autonomous - were the people surveyed most worried about?

a. Reduced private ownership of cars.

b. Less traffic lights on roads.

c. Reduced number of driving jobs.

d. Less space needed for parking.

e. Reduced vehicle emissions. => c

Smart cities use the Internet of Things to improve the quality of citizens' lives. True or False?

a. True

b. False => a

Which of the following is one of the ways IoT monitoring of dairy cows improves dairy farming?

a. The system tells you when cows are ready for milking, saving time spent on monitoring the herd.

b. The system can sound alarms when cows roam into neighbouring paddocks.

c. The system notices the cows that are unwell, so they are treated quicker, which speeds up recovery time.

d. The system results in more milk from the cows' udders for each milking. => c

What does the 'things' in Internet of Things refer to?

a. Smart phones and tablets

b. Machines and vehicles that operate themselves

c. A physical object with embedded electronics => c

Sensors play a big part in the Internet of Things, collecting data from the physical world. There is a long and growing list of sensor types, but some of the more common ones are found in smart phones. Which sensor in your phone collects information on your physical activity for health apps?

a. Gyroscope

b. Magnetometer

c. Proximity sensor

d. Accelerometer => d

In an industrial fan maintenance system, what physical change does Ian Howard say a sensor might detect, measure and transmit data on?

a. Vibration

b. Blade speed

c. Power

d. Wind direction => a

When the gate system at the dairy closes one gate and opens another to direct a cow into a particular area, what is (or what are) the actuators in play?

a. RF antennae detecting ID of cow

b. Light sensors detecting cow in gate

c. Pneumatic arms on gate mechanism

d. Movement sensor in cow's pendant => c

The IoT increases the potential for machines to make smart decisions based on collected data, and to act on them, leaving people (apart from the original programmers and those setting the parameters) out of the loop. This is called M2M. Select an example of M2M from the descriptions below.

a. A sensor on a milking cow indicates that she is moving in a way that suggests she in on heat and will be receptive to insemination. She is placed on a watch list and the herd manager chooses to draught her out, after milking, for insemination.

b. An autonomous ambulance on an emergency call approaches an intersection and communicates with the signals to change the lights from red to green, to allow smooth passage through the intersection.

c. Sensors on a bridge detect strain in bridge joints. Areas of concern are flagged with the maintenance team who can respond to specific problems, rather than carrying out lengthy inspections. => b

What is the main advantage of IPv6, and why does it suit IoT?

a. IPv6 provides many more IP addresses, which increases the potential number of hosts and amount of data.

b. IPv6 is more up to date protocol with leaner mechanisms which suit modern microprocessors.

c. IPv6 is faster and can carry more data. => a

What protocol is good for communication of IoT devices with restricted power and low data rates over a range of a few kilometres?

a. Bluetooth

b. Zigbee

c. LoRaWAN

d. 4G

e. WiFi => c

Which of these media is currently NOT used in communicating data?

a. Wireless / electromagnetic waves

b. Hydrogen cables / electron ionisation

c. Fibre optics / pulses of light

d. Copper cables / electrical signals => b

Communication in a network is carried via a \_\_\_\_\_\_\_ ?

a. Sensor

b. Router

c. Medium

d. Device

e. Controller => c

When you upload a photo from your camera to a social media site, what kind of path is the information likely to travel?

a. End device -> Modem -> Controller -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server

b. End device -> Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's server -> social media site's ISP

c. End device -> Controller -> Modem -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server

d. Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's ISP -> social media site's server -> End device => c

All of the parts of a complete IoT process need programming. But where in the following IoT process is programming needed for the system to be Internet of Things?

Soil sensor -> microcontroller -> Cloud -> microcontroller -> fertilising mechanism

a. Soil sensor and Cloud and fertilising mechanism

b. Microcontroller and Cloud

c. Soil sensor and Microcontroller

d. Soil sensor and fertilising mechanism => b

What are the descriptors for Big Data? (as coined by IBM)

a. Speed, True, Diversity, Amount

b. Vast, Velocity, Variance, Verified

c. Volume, Velocity, Variety, Veracity => c

Which of the following functions does NOT apply to a typical data centre's services?

a. Data storage

b. Data management

c. Data analysis

d. Data security

e. Data generation => e

Which of these sentences could be a line of programming code?

a. If temperature is more than 30 degrees C, run fan, else, run heater

b. When it gets too hot, turn the fan on otherwise keep heating the room

c. Run heater until temperature reaches 30 degrees C then cool it down => a

Why will IoT put a strain on internet infrastructure?

a. The unprecedented amount of data

b. The variety of IoT protocols

c. The large number of unsecured devices connecting to the internet => a

What data security concerns do IoT devices pose?

a. The device being hijacked to harm another device or system

b. Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption

c. The devices being small and embedded into objects makes them easily vandalised or stolen => b

How does the addition of data due to IoT create privacy issues?

a. Systems struggle to deal with the large amount of data so data gets 'stuck outside security' waiting to be dealt with

b. Multiple data sets each stripped of identification initially can be combined as a whole and reveal identity

c. More data going through security measures inevitably means more security breakdowns and data leakage

d. IoT devices generally connect wirelessly creating additional harder to secure channels for data hijack => b

Which of the following is NOT a security measure?

a. Encryption

b. Password

c. Firewall

d. Firmware => d

Which of the following aspects of the Internet of Things brings additional security issues? Select all that apply.

a. a massive volume of extra data pouring into the internet

b. extra networking to connect these devices

c. more machine to machine (M2M) interactions and autonomous decision-making

d. extra devices being connected

e. extra programming to direct the devices and networking => a,b,c,d,e

How does fog computing reduce security risks?

a. It acts on IoT data closer to the source

b. It creates unclear connections that are difficult to intercept

c. It reduces the need for remote management

d. It scrambles electronic signals and encrypts all data => a

When you have a potential IoT idea you want to develop properly, what must you first define?

a. Its Unique Value Proposition

b. Problem it sets out to solve

c. Route to market

d. How it will work => b

Which of these is NOT electronic equipment you can use for IoT prototyping?

a. Arduino microcontroller

b. Raspberry Pi microprocessor

c. Blackberry router

d. LED => c

What is the W3C or World Wide Web Consortium?

a. A group that meets on the World Wide Web

b. A body that looks at disability issues on the internet

c. A body that creates web standards => c

What IoT solution is offered by HitIQ?

a. Mouthguard detecting impact forces to the head combined with collecting data to assist assessment and rehabilitation.

b. Mouthguard to reduce impact forces and deliver immediate relief to athlete at time of impact.

c. Mouthguard that tells athletes when they are concussed and need to stop playing to avoid brain injury. => a

Is it useful completing a business plan for a personal or in-house IoT product?

a. Yes

b. No => a

What is Fog computing?

a. It is a type of computing that enhances P2P applications.

b. It is a type of computing that sends controller data to a sensor.

c. It is a type of computing that disperses servers and services globally in distributed data centers.

d. It is a type of computing where services are hosted where they are used, such as at the network edge or with end devices. => d

What is an example of cloud computing?

a. A continuous interaction between people, processes, data, and things.

b. A service that offers on-demand access to shared resources.

c. A network infrastructure that spans a large geographic area.

d. An architectural style of the World Wide Web. => b

What is used to uniquely identify devices connected to the Internet?

a. gateway address

b. IP address

c. device name

d. URL

e. ZigBee => b

What are the three categories of components that make up a network infrastructure? Select three.

a. protocols

b. devices

c. media

d. services

e. operating systems

f. programs => b,c,d

What are two challenges that are associated with the rapid growth of IoT? Select two.

a. Adding more switching ports for new things.

b. Improving Internet connections for organisations.

c. Securing new devices that require different levels of security.

d. Assure interoperability among different device vendors.

e. Developing new programming languages specifically for IoT. => c,d

The resistance of a heater coil is 10 Ohms and the input voltage is 120V. What is the current?

a. 12 amps

b. 1,200 amps

c. 0.083 amps => a

A DC motor requires a current of 10 Amperes to operate at full speed. The battery attached supplies 12 Volts. What resistance is required in the circuit to provide exactly 10 A to the motor?

a. 12 ohms

b. 120 ohms

c. 1.2 ohms => c

A vacuum cleaner has a maximum power consumption of 1000 W and is powered by 240 Volts. What is the current used?

a. 24 amps

b. 4.17 amps

c. 0.24 amps => b

What makes Field Effect Transistors important in today's electronic devices?

a. When they are in saturation or cut off state they consume practically no power.

b. When they are in saturation or cut off state they consume the same amount of power. => a

A transistor is in a saturation state when:

a. Highest level of resistance and maximum current.

b. Lowest level of resistance and maximum current.

c. Highest level of resistance and negligible current.

d. Lowest level of resistance and negligible current. => b

A 10-bit, analogue-to-digital converter has a reference voltage of 10 V. What would be the binary representation of an input voltage of 3.356 V?

a. 1010100111

b. 0101011000

c. 1110001010

d. 0010011101

e. None of the above => b

If you need to increase the current through a resistor in a circuit, what would you do?

a. Decrease the voltage applied to the resistor.

b. Increase the voltage applied to the resistor.

c. Increase the room temperature.

d. Increase the value of the resistor.

e. All of the above. => b

When current flows through a resistor, the power involved produces heat. What measures could be taken during design to reduce the generation of heat inside a computer?

a. Reduce the voltage from the power supply.

b. Increase the total resistive value in the circuit.

c. Increase the physical size of resistors.

d. Use capacitors on the output of the power supply.

e. All of the above. => a

Which of the following IS NOT a characteristic of semiconductor materials?

a. They are better conductors than insulators.

b. They can be contaminated to improve their semiconductor properties.

c. Some are abundantly found in nature.

d. They have high quantities of free electrons at room temperature when pure.

e. All of the above. => d

Which function in the Arduino IDE is used to set any pin in output or input state?

A.digitalWrite

B.delay

C.pinMode

D.analogRead => C.pinMode

How many PWM pins are present in the Arduino UNO?

A.1

B.3

C.6

D.9 => C.6

What among the following is an example of external interrupt for the Arduino?

A.Button

B.Resistor

C.LED

D.Capacitor => A.Button

What will be the correct syntax to make a digital pin (say D2) as an output pin?

A.pinMode(2,output)

B.pinMode(2,Output)

C.pinMode(2,OUTPUT)

D.pinmode(2,OUTPUT) => C.pinMode(2,OUTPUT)

Which of the following digital pins can be used in Arduino Nano/Uno to give interrupt?

A.D2

B.D6

C.D4,D5

D.D2,D3 => D.D2,D3

What is the size of EEPROM of the Arduino UNO?

A.1 KB

B.2 KB

C.4 KB

D.8 KB => A.1 KB

Which function in the Arduino is used to start the serial communication using the COM port?

A.Serial.available()

B.Serial.begin()

C.serial.begin()

D.setup() => B.Serial.begin()

The action that will be performed using this switch case will be:switch (2): {case 1: digitalWrite(11,HIGH); case 2: analogRead(A3)}

A.D11 will become HIGH

B.Analog value of A3 will be read

C.D11 will become LOW

D.None of the other => B.Analog value of A3 will be read

While taking the input from the user in Arduino, which of these function is used in Sketch?

A.Serial.print

B.Serial.println

C.Serial.available

D.None of the other => C.Serial.available

What is the Tinkercad Circuits?

A.Its a just s software to create games

B.Tinkercad is a free online collection of software tools that help people create and simulation circuits.

C.Its a software for playing and create games.

D.None of the other => B.Tinkercad is a free online collection of software tools that help people create and simulation circuits.

How do you zoom in on Tinkercad?

A.Spacebar

B.Use the arrows on the keyboard

C.Use the scroll wheel

D.Right Click => C.Use the scroll wheel

A photoresistor is an electronic component whose electrical resistance \_\_\_\_\_\_\_ when it is exposed to light.

A.changes

B.increases

C.doesn't change => A.changes

What does this syntax mean? myservo.attach(9)

A.Connect the control wire 9 to GND pin

B.Connect the control wire for 9 seconds

C.Connect the control wire to 9 volts

D.Connect the control wire to digital pin 9 => D.Connect the control wire to digital pin 9

In remote control terms, IR stands for what?

A.indirect radio

B.infrared

C.inside remote

D.instant reception => B.infrared

Infrared remote controls use what to carry signals between the remote control and the device it controls?

A.radio waves

B.sound

C.light => C.light

Infrared signals can be used for \_\_\_\_\_\_.

A.(a) long-range communication

B.(b) short-range communication

C.Both (a) and (b)

D.None of the other => B.(b) short-range communication

Which sensor is LM35?

A.Pressure sensor

B.Humidity sensor

C.Temperature sensor

D.Touch sensor => C.Temperature sensor

LM35 provides \_\_\_\_\_\_\_ Volt for each degree count?

A.1

B.0.01

C.0.001

D.10 => B.0.01

What is the main purpose of the SRF05 sensor?

A.Water level sensor

B.Sound intensity sensor

C.Ranging sensor

D.Temperature sensor => C.Ranging sensor

What is the purpose of the pin named ECHO of HC-SR04 sensor?

A.Allows the ultrasonic sound wave to be sent from the sensor.

B.Provides the information that the ultrasonic sound wave is returned.

C.Allows the sensor to be fed with energy.

D.Provides the chassis connection of the sensor. => B.Provides the information that the ultrasonic sound wave is returned.

What does the AREF pin on the Arduino UNO?

A.Used to trigger a interrupt.

B.Reference voltage for analog inputs.

C.To reset the microcontroller.

D.Provides 8-bit PWM signal. => B.Reference voltage for analog inputs.

What pins can the Arduino UNO board communicate with the computer?

A.PWM pins

B.ADC pins

C.I2C pins

D.UART pins => D.UART pins

What case is called serialEvent() interrupt?

A.Serial port shuts down.

B.When data is sent from the serial port.

C.When data comes from the serial port.

D.When the voltage is applied to the Arduino. => C.When data comes from the serial port.

Each computer has its own Internet search engine.

A.True

B.False => B.False

What does CRM stand for?

A.Customer Research Management

B.Customer Relationship Management

C.Customized Research Management

D.Customer Research Metrics => B.Customer Relationship Management

How has e-commerce revolutionized business?

A.It has allowed businesses to utilize new avenues of advertising, selling, and distribution.

B.It attempts to level the playing field.

C.It transcends geographic boundaries.

D.All of the above => D.All of the above

A \_\_\_\_\_ allows customers to continue browsing after selecting each item they wish to purchase

A.Shopping Cart

B.Forms-based interface

C.SSL connection

D.Virtual memory => A.Shopping Cart

Which of the following is NOT a standard used in E-Commerce?

A.EDI

B.XML

C.SETI

D.X12 => C.SETI

Which of the following is NOT the characteristics of consumer when studying about EC Consumer Behavior Model?

A.Age

B.Gender

C.E-mail

D.Education => C.E-mail

Mechanism to protect private networks from outside attack is

A.Firewall

B.Antivirus

C.Digital signature

D.Formatting => A.Firewall

While making payment using electronic check, credit and debit cards, the server authenticates the customers and verifies with the bank that funds are adequate before purchase

A.True

B.False => A.True

A computer communication technology that provides a way to interconnect multiple computer across short distance is

A.LAN

B.WAN

C.MAN

D.Wireless network => A.LAN

DNS is

A.The distributed hierarchical naming system

B.The vertical naming system

C.The horizontal naming system

D.The client server system => C.The horizontal naming system

Which of the following is a technology constraint from the e-commerce macro-environment?

A.Propensity for consumers to purchase online.

B.Opt-in to e-mail required to avoid SPAM

C.Likelihood of fraudulent transactions

D.Taxation at source of purchase => C.Likelihood of fraudulent transactions

In E-Commerce, HTTPS is a communication protocol that uses

A.Public key encryption

B.Secret key encryption

C.Private key encryption

D.Data key encryption => A.Public key encryption

The concept of electronic cash is to execute payment by

A.Credit Card

B.ATM Card

C.Using computers over network

D.Cheque => C.Using computers over network

A chemical manufacturer has transactions that are predominantly:

A.business to consumer.

B.consumer to consumer.

C.consumer to business

D.business to business => C.consumer to business.

A B2B reverse auction is:

A.the same as a seller auction.

B.intended to reduce the price by increasing competition from suppliers.

C.always run through a B2B marketplace.

D.both the second and third answers above. => B.intended to reduce the price by increasing competition from suppliers.

A computer system that permits multiple users to run programs at same time

A.Real time system

B.Multi programming system

C.Time sharing system

D.Multi tasking system => D.Multi tasking system

The mercantile process model consists of the following phase(s):

A.The pre-purchase phase

B.Purchase consummation phase

C.Post-purchase Interaction phase

D.All of the above => D.All of the above

The most serious disadvantage of e-auctions is:

A.the risk of fraud.

B.Logistics.

C.unreliable auction software.

D.payment delays. => A.the risk of fraud.

Many companies use intermediaries or trading assistants instead of implementing e-auctions themselves for each of the following reasons EXCEPT:

A.The company name is not widely recognized.

B.To bring many more buyers to the auction.

C.To avoid tax and legal fees.

D.Costs of auction intermediaries or assistants are less than the costs of physical auctions. => C.To avoid tax and legal fees.

All of the following are potential benefits from auctions to sellers EXCEPT:

A.auctions can broaden the customer base and reduce cycle time.

B.sellers receive valuable price sensitivity information.

C.sellers are always anonymous.

D.sellers can liquidate large quantities of obsolete items very quickly. => C.sellers are always anonymous.

Select the correct answer from the choices below which is corresponding with the following statement in STRATEGIC PLANNING TOOLS" : It is a methodology that surveys external opportunities and threats and relates them to internal strengths and weaknesses.

A.SWOT analysis

B.strategy map

C.balanced scorecard

D.BCG matrix => A.SWOT analysis

A major shortcoming with authentication services is:

A.two different authenticators may come up with different opinions regarding the authenticity and description of a given item.

B.it is impossible to tell whether many items are reproductions or genuine.

C.dishonest authenticators are the primary sources of fraud on the Internet.

D.most auction sites forbid the use of authentication services. => A.two different authenticators may come up with different opinions regarding the authenticity and description of a given item.

\_\_\_\_\_ work best with many buyers and many sellers.

A.Bartering

B.Dynamic exchanges

C.Forward auctions

D.Reverse auctions => A.Bartering

The services provided through location-based m-commerce focus on key factors which include all of the following EXCEPT:

A.Geocaching, or determining the topography of an area.

B.Navigation, or plotting a route from one location to another.

C.Tracking, or monitoring the movement of a person or thing.

D.Timing, or determining the precise time at a specific location => A.Geocaching, or determining the topography of an area.

Infrastructures that "support" the wireless connection are:

A.network access points, mobile communications server switches, and cellular transmitters and receivers.

B.WAP gateways, GPS locators, and GPS satellites.

C.PDAs, smartphones, and portable computers.

D.web servers, mobile devices, and microbrowsers. => A.network access points, mobile communications server switches, and cellular transmitters and receivers.

A \_\_\_\_\_\_ is suitable for mobile users who need to make very short-range device-to-device wireless connections within a small space, such as a single room, and most commonly with Bluetooth.

A.personal area network

B.local area network

C.wireless area network

D.metropilitan area network => A.personal area network

You are walking near a coffee shop and suddenly your cell phone beeps with a message: "Come inside and get a free biscotti with any purchase." This is an example of:

A.permission marketing

B.location-based advertising

C.customer relationship management

D.m-commerce => C.customer relationship management

: When you have a potential IoT idea you want to develop properly, what must you first define?

0/2

a. Its Unique Value Proposition

b. Problem it sets out to solve

c. Route to market

d. How it will work => b

Q2. What is used to uniquely identify devices connected to the Internet?

0/2

a. gateway address

b. IP address

c. device name

d. URL => b

Q3. What data security concerns do IoT devices pose?

0/2

a. The device being hijacked to harm another device or system

b. Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption

c. The devices being small and embedded into objects makes them easily vandalised or stolen => b

Q4. A DC motor requires a current of 10 Amperes to operate at full speed. The battery attached supplies 12 Volts. What resistance is required in the circuit to provide exactly 10 A to the motor?

0/2

a. 12 ohms

b. 120 ohms

c. 1.2 ohms => c

Q5. Which of the following function is used to set any pin in the state of HIGH/LOW ?

0/2

a. digitalRead

b. digitalWrite

c. analogWrite

d. pinMode => b

Q6. What will be the correct syntax to make a digital pin (say D2) as an output pin?

0/2

a. pinMode(2,output)

b. pinMode(2,Output)

c. pinMode(2,OUTPUT)

d. pinmode(2,OUTPUT) => c

Q7. Which function in the Arduino is used to start the serial communication using the COM port?

0/2

a. Serial.available()

b. Serial.begin()

c. serial.begin()

d. setup() => b

Q8. The action that will be performed using this switch case will be:switch (2): {case 1: digitalWrite(11,HIGH); case 2: analogRead(A3)}

0/2

a. D11 will become HIGH

b. Analog value of A3 will be read

c. D11 will become LOW

d.None of the other => b

Q9. A photoresistor is an electronic component whose electrical resistance \_\_\_\_\_\_\_ when it is exposed to light.

0/2

a. changes

b. increases

c. doesn't change => a

Q10. In remote control terms, IR stands for what?

0/2

a. indirect radio

b. infrared

c. inside remote

d. instant reception => b

Q11. Infrared signals can be used for \_\_\_\_\_\_.

0/2

a. (a) long-range communication

b. (b) short-range communication

c. Both (a) and (b)

d. None of the other => b

Q12. LM35 provides \_\_\_\_\_\_\_ Volt for each degree count?

0/2

a. 1

b. 0.01

c. 0.001

d. 10 => b

Q13. What does the AREF pin on the Arduino UNO?

0/2

a. Used to trigger a interrupt.

b. Reference voltage for analog inputs.

c. To reset the microcontroller.

d. Provides 8-bit PWM signal. => b

Q14. What case is called serialEvent() interrupt?

0/2

a. Serial port shuts down.

b. When data is sent from the serial port.

c. When data comes from the serial port.

d. When the voltage is applied to the Arduino. => c

Q15. Sensors play a big part in the Internet of Things, collecting data from the physical world. There is a long and growing list of sensor types, but some of the more common ones are found in smart phones. Which sensor in your phone collects information on your physical activity for health apps?

0/2

a. Gyroscope

b. Magnetometer

c.Proximity sensor

d. Accelerometer => d

Q16. All of the parts of a complete IoT process need programming. But where in the following IoT process is programming needed for the system to be Internet of Things?

0/2

a. Soil sensor to microcontroller to the Cloud to microcontroller to fertilising mechanism

b. Soil sensor and Cloud and fertilising mechanism

c. Microcontroller and Cloud

d. Soil sensor and Microcontroller

e. Soil sensor and fertilising mechanism => c

Q17. In the reticulation (water irrigation) system, what type of device is the outdoor camera?

0/2

a. Sensor

b.Actuator

c. Control

d. none of the above => a

Q18. If we intend to include a servo motor as an actuator, what feature should we include when selecting a microcontroller?

0/2

a. Analogue to Digital converter

b. Digital to Analogue converter

c. GPIO pins

d. Pulse Width Modulation pin

e. I2C pins => d

Q19. In an IoT smart home system, sensors are connected to the home power outlet and are required to process some part of the collected data. What would be the best option to connect sensors to each other, as well as a central location for Internet connection, where high data rate is required?

0/2

a. Bluetooth

b. 6LowPAN

c. WiFi

d. LoRa => c

Q20. Fill in the blank: System \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be a major problem, especially in badly designed closed-loop systems, as they may try to over-correct any errors which could cause the system to lose control and oscillate.

0/2

a. stability

b. scalability

c. security

d. useability

e. feedback => a

Q21. One advantage of a closed loop feedback system is:

0/2

a. Simplicity of design

b. Ability to react to disturbances in the system

c. It is less stable than an open loop system

c. Depends on calibration for accuracy

e. All of the above => b

Q22. \_\_\_\_\_\_\_\_ provide the means to create capability that reflects true awareness of the physical world and people.

0/2

a. Sensors

b. Heterogeneity

c. Security

d. Connectivity => a

Q23. IoT devices are naturally vulnerable to \_\_\_\_\_\_\_\_ threats.

0/2

a. Sensors

b. Heterogeneity

c. Security

d. Connectivity => Security

Q24. What is the role of communication protocol in IoT?

0/2

a. Smart cities

b. Cyber physical system

c. Mac layer issue

d. Managing energy => Mac layer issue

25. When current flows through a resistor, the power involved produces heat. What measures can be taken to reduce the generation of heat inside a computer?

0/2

a. Reduce the voltage from the power supply.

b. Increase the total resistive value in the circuit.

c. Increase the physical size of resistors.

d. Use capacitors on the output of the power supply.

e. All of the above. => a

Q26. What is the microcontroller used in Arduino UNO?

0/2

a. ATmega328p

b. ATmega2560

c. ATmega32114

d. AT91SAM3x8E => a

Q27. Arduino IDE consists of 2 functions. What are they?

0/2

a. Build() and loop()

b. Setup() and build()

c. Setup() and loop()

d. Loop() and build() and setup() => c

Q28. A provider which produces 99 percent uptime \_\_\_\_\_\_\_\_

0/2

a. Security issues

b. Network Issues

c. Programming issue

d. Memory issue => b

Q29. Which digit does the colour orange denote on a resistor colour band?

0/2

a. 9

b. 1

c. 6

d. 3 => d

Q30. A resistor's first three colour bands are brown, green and red. What is its value?

0/2

a. 1500 ohms

b. 250 ohms

c. 2000 ohms

d. 510 ohms => a

Q31: Which possibility ensures load balancing and peak levelling of energy consumption?

0/2

a. Transportation and logistics

b. Energy and utilities

c. Automotive

d. Connected supply chain => B.Energy and utilities

Q32. What does GPIO stand for?

0/2

a. General Purpose Inner Outer Propeller

b. General Purpose Interested Old People

c. General Purpose Input Output Pins

d. General Purpose Input Output Processor => c

Q33. A function is a series of programming statements that can be called by name. Which command is called once when the program starts:

0/2

a. loop()

b.(output)

c. setup()

d. (input) => c

Q34. What is the main advantage of IPv6, and why does it suit IoT?

0/2

a. IPv6 provides many more IP addresses, which increases the potential number of hosts and amount of data.

b. IPv6 is more up to date protocol with leaner mechanisms which suit modern microprocessors.

c. IPv6 is faster and can carry more data. => a

Q35. When you upload a photo from your camera to a social media site, what kind of path is the information likely to travel?

0/2

a. End device -> Modem -> Controller -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server

b. End device -> Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's server -> social media site's ISP

c. End device -> Controller -> Modem -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server

d. Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's ISP -> social media site's server -> End device => c

Q36. What is another way of thinking of the DTE?

0/2

a. As a Modem

b. As a Computer

c. As a Router => b

Q37. Bluetooth uses low power radio waves in the frequency range of ...?

0/2

a. 2.4 - 2.485Hz

b. 2.4 - 2.485GHz

c. 2.4 - 2.485MHz => b

Q38. The huge numbers of devices connected to the Internet of things have to communicate automatically, not via humans. What is this called?

0/2

a. Bot to Bot (B2B)

b. Machine to Machine (M2M)

c. InterCloud

d. Skynet => b

Q39. \_\_\_\_\_\_\_\_ empowers IoT by bringing together everyday objects.

0/2

a. Intelligence

b. Connectivity

c. Dynamic Nature

d.Enormous Scale => b

Q40. \_\_\_\_\_\_\_\_ a cellular network is expensive, especially with many IoT devices.

0/2

a. Signaling

b. Security

c. Bandwidth

d. Power consumption => c

Q41. NFC stands for \_\_\_\_\_\_\_\_

0/2

a. Near Fast Communication

b. Near Field Communication

c. Near Field Customer

d. Near Field Connection => c

Q42. How does fog computing reduce security risks? \*

2/2

a. It acts on IoT data closer to the source

b. It creates unclear connections that are difficult to intercept

c. It reduces the need for remote management

d. It scrambles electronic signals and encrypts all data => a

Q43: What is an example of cloud computing?

0/2

a. A continuous interaction between people, processes, data, and things.

b. A service that offers on-demand access to shared resources.

c. A network infrastructure that spans a large geographic area.

d. An architectural style of the World Wide Web. => b

Q44: Which of the following disruptions - caused by vehicles becoming fully autonomous - were the people surveyed most worried about?

0/2

a. Reduced private ownership of cars.

b. Less traffic lights on roads.

c. Reduced number of driving jobs.

d. Less space needed for parking.

e. Reduced vehicle emissions.

f. Which of the following disruptions - caused by vehicles becoming fully autonomous - were the people surveyed most worried about? => c

Q45: Which of the following is one of the ways IoT monitoring of dairy cows improves dairy farming?

0/2

a. The system tells you when cows are ready for milking, saving time spent on monitoring the herd.

b. The system can sound alarms when cows roam into neighbouring paddocks.

c. The system notices the cows that are unwell, so they are treated quicker, which speeds up recovery time.

d. The system results in more milk from the cows' udders for each milking. => c

Q46: Which of the following functions does NOT apply to a typical data centre's services?

0/2

a. Data storage

b. Data management

c. Data analysis

d. Data security

e. Data generation => e

Q47: Closed-loop Systems use feedback where a portion of the output signal is fed back to the input to reduce errors and improve stability.

0/2

a. True

b. False => a

Q48: Which challenge comes under securing the information?

0/2

a. Signaling

b. Security

c. Presence detection

d. Power consumption => b

Q49: Which challenge comes under IoT devices, reliable bidirectional signaling.

0/2

a. Signaling

b. Security

c. Presence detection

d. Power consumption => a

Q50: Which of the following issues are considered in IoT?

0/2

A .Security Issue

B .Reliablity Issue

C .Standard Issue

D .All issues => d

Subject: **IOT102 – Internet of Things**

Number of question: 20

|  |  |
| --- | --- |
| QN=1 | What is IoT? |
| a. | The Internet connecting everything |
| b. | The Internet controlling everything |
| c. | The Internet dectecting everything |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 1 |
| LO: | LO1 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=2 | Which of the following is application of IoT? |
| a. | Industrial robots |
| b. | Automatic production |
| c. | Smart homes, smart hospitals |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 2 |
| LO: | LO1 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=3 | An IoT structure consists of |
| a. | 3 components |
| b. | 4 components |
| c. | 5 components |
| d. | 6 components |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO2 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=4 | Name the components of an IoT structure. |
| a. | Devices (Things), Networking Infrastructure (Network and Cloud), Unit of Data Analysis and Processing (Services-creation and Solution Layers). |
| b. | Devices (Things), Connection Stations ([Gateways](https://vi.wikipedia.org/wiki/Gateway_(truy%E1%BB%81n_th%C3%B4ng))), Networking Infrastructure (Network and Cloud), Input/Output Devices. |
| c. | Devices (Things), Connection Stations ([Gateways](https://vi.wikipedia.org/wiki/Gateway_(truy%E1%BB%81n_th%C3%B4ng))), Networking Infrastructure (Network and Cloud), Unit of Data Analysis and Processing (Services-creation and Solution Layers), Input/Output Devices. |
| d. | **Devices** (Things), **Connection Stations** ([Gateways](https://vi.wikipedia.org/wiki/Gateway_(truy%E1%BB%81n_th%C3%B4ng))), **Networking** **Infrastructure** (Network and Cloud), **Unit of Data Analysis and Processing** (Services-creation and Solution Layers). |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO2 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=5 | What does IoT do in a smart home? |
| a. | Remotely monitor and control the temperature via a smartphone |
| b. | Control the temperature via infrared waves |
| c. | Control the sounds via Bluetooth |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 5 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=6 | Is IoT applied in smart agriculture? |
| a. | Yes |
| b. | No |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 7 \_Ebook 2 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=7 | What is AWS IoT Device Defender? |
| a. | A fully managed service that helps you secure your fleet of IoT devices |
| b. | A service that manages IoT devices |
| c. | A service that manipulates IoT devices |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 7 |
| LO: | LO4 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=8 | Why do we have to secure IoT? |
| a. | To protect users, devices and enterprises |
| b. | To protect devices and the Internet |
| c. | To protect companies that are attacked by hackers |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 7 |
| LO: | LO4 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=9 | Electronic circuits are included in IoT systems. |
| a. | True |
| b. | False |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 7 |
| LO: | LO5 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=10 | What is Arduino? |
| a. | An open source hardware and software platform |
| b. | A control circuit board |
| c. | A microprocessor |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 6- book 2 |
| LO: | LO6 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=11 | What language is used for **Arduino programming**? |
| a. | C/C++ |
| b. | Python |
| c. | Java |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 9 |
| LO: | LO6 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=12 | Does Arduino have analog inputs? |
| a. | Yes |
| b. | No |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 9 |
| LO: | LO6 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=13 | Does Arduino have digital data output? |
| a. | Yes |
| b. | No |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 10 |
| LO: | LO7 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=14 | What are IoT sensors for? |
| a. | To collect data from the surrounding environment. |
| b. | To control devices from the surrounding environment. |
| c. | To adjust data from the surrounding environment. |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 12 |
| LO: | LO7 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=15 | Are IoT sensors and Network Interface Cards (NIC) the same? |
| a. | Yes |
| b. | No |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 13 |
| LO: | LO8 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=16 | Can engines be controlled remotely using IoT? |
| a. | Yes |
| b. | No |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 13 |
| LO: | LO8 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=17 | IoT can connect devices via Wifi network. |
| a. | True |
| b. | False |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 13 |
| LO: | LO9 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=18 | How do the program on a personal computer communicate with Arduino UNO? |
| a. | Via USB port |
| b. | Via HDMI port |
| c. | Via VGA port |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 15 |
| LO: | LO9 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=19 | What is Proteus software? |
| a. | Electronic circuit simulation software |
| b. | Circuit drawing software |
| c. | Civil circuit simulation software |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 16 |
| LO: | LO10 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=20 | Can Proteus software simulate programs running on Arduino board? |
| a. | Yes |
| b. | No |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 16 |
| LO: | LO10 |
| MIX CHOICES: | yes |

Subject: **IOT102 – Internet of Things**

Number of question: 20

|  |  |
| --- | --- |
| QN=1 | A program written in the Arduino IDE is called: |
| a. | a sketch |
| b. | a source code unit |
| c. | an IDE source |
| d. | an Arduino unit |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 2 |
| LO: | LO2 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=2 | By default, Arduino IDE consists of 2 functions. What are they? |
| a. | setup() and build() |
| b. | loop() and build() |
| c. | setup() and loop() |
| d. | build() and loop() |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO2 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=3 | Which leg of the LED is connected to GND? |
| a. | Long leg |
| b. | Short leg |
| c. | Either of the two legs |
| d. | There is no need to connect to GND |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=4 | The Arduino board has one built-in LED on which digital pin? |
| a. | 3 |
| b. | 9 |
| c. | 11 |
| d. | 13 |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=5 | How many analog inputs are there on the UNO board? |
| a. | 2 |
| b. | 4 |
| c. | 6 |
| d. | 8 |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 6 |
| LO: | LO4 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=6 | An analog signal is one that can take on any number of values (instead of binary values). |
| a. | True |
| b. | False |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 6 |
| LO: | LO4 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=7 | A component has a resistance that changes with the light intensity that falls upon it. What is it called? |
| a. | Resistor |
| b. | Photoresistor |
| c. | Potentiometer |
| d. | Sensor |
| e. |  |
| f. | B |
| ANSWER: |  |
| MARK: | 1 |
| UNIT: | 9 |
| LO: | LO5 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=8 | Which one is a temperature sensor? |
| a. | LM35 |
| b. | Photoresistor |
| c. | RX330 |
| d. | Breadboard |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 11 |
| LO: | LO6 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=9 | A humidity sensor can be considered a simple |
| a. | thermometer |
| b. | barometer |
| c. | hydrometer |
| d. | hygrometer |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 13 |
| LO: | LO7 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=10 | How many times does setup function run in an Arduino program? |
| a. | 1 |
| b. | 2 |
| c. | 10 |
| d. | Forever |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO2 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=11 | How many times does loop function run in an Arduino program? |
| a. | 1 |
| b. | 4 |
| c. | 5 |
| d. | Forever |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO2 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=12 | To open Serial Monitor, what keyboard shortcut do you use? |
| a. | Ctrl-Shift-L |
| b. | Ctrl-Shift-M |
| c. | Ctrl-M |
| d. | Shift-M |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 5 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=13 | Which of the following is an actuator? |
| a. | Button |
| b. | Servo SG90 |
| c. | Keypad |
| d. | IR remote control |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 12 |
| LO: | LO9 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=14 | Choose the odd one: |
| a. | Proteus |
| b. | Fritzing |
| c. | Photoshop |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=15 | To control the brightness of an LED, we use the function: |
| a. | analogWrite(pin, value) |
| b. | digitalWrite(pin, HIGH) |
| c. | digitalWrite(pin, LOW) |
| d. | digitalWrite(pin, HIGH -> LOW) |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 14 |
| LO: | LO7 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=16 | The function delay(1000) delays: |
| a. | 1000 s |
| b. | 1000 ms |
| c. | 10 s |
| d. | 1 s |
| e. |  |
| f. |  |
| ANSWER: | BD |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=17 | Which one is not a sensor? |
| a. | LM35 |
| b. | HC-SR04 |
| c. | A buzzer |
| d. | A motion detector |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 15 |
| LO: | LO10 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=18 | Which is not an IoT application? |
| a. | Smart city |
| b. | Smart home |
| c. | Connected cars |
| d. | Web browsers |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 2 |
| LO: | LO1 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=19 | Which one is not a “smart city” yet? |
| a. | Barcelona |
| b. | Seoul |
| c. | Da Nang |
| d. | Singapore |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=20 | What can be things in the Internet of things? |
| a. | People |
| b. | Animals |
| c. | Electronic devices |
| d. | Computers |
| e. | All of the physical objects embedded with electronics, software, sensors, and network connectivity, which enables these objects to collect and exchange data |
|  |  |
| ANSWER: | E |

1. **The number of bits transmitted of received per second is defined as** 
   1. transmission rate
   2. reception rate
   3. transceiver
   4. baud rate
2. **The void loop() function does precisely what its name suggests, and loops** 
   1. One and Done
   2. Once and Twice
   3. Once and Never
   4. Over and over
3. **To vary the brightness of an LED, anode of the LED is to be connected at** 
   1. any digital pin
   2. only PWM featured pin
   3. ground
   4. analog input in
4. **MQTT is better than HTTP for sending and receiving data**
   1. True
   2. False
5. **Which protocol is lightweight?**
   1. MQTT
   2. HTTP
   3. CoAP
   4. SPI
6. **BAN gives** 
   1. Communication
   2. Storage
   3. Network connectivity
   4. Communication and storage
7. **To activate serial monitor, what setup code is to be written?**
   1. serialBegin(9600);
   2. Serialbegin(9600);
   3. Serial.begin(9600);
   4. Serial.Begin(9600);
8. **What is the resolution of the ADC present in the arduino Uno?**
   1. 8-bit
   2. 10-bit
   3. 6-bit
   4. 16-bit
9. **What is the maximum output current for the digital pin in Arduino Uno?**
   1. 20 mA
   2. **40 mA**
   3. 80 mA
   4. 100 mA
10. **A sensor is**
11. something that detects a change
12. something creates a change
13. something that humans have
14. **What is the format of IP address?**
15. 34 bit
16. 64 bit
17. 16 bit
18. 32 bit
19. **With Arduino, what symbol do you place at the end of each line of code?**
20. (
21. (
22. ;
23. //
24. **What are two two main types of Arduino pins?**
25. Digital and analog
26. Digital and modulation
27. Pulse and analog
28. **What is the clock speed of the Arduino Uno?**
29. 16 Hz
30. 16 MHz
31. 8 MHz
32. 4 MHz
33. **The base of a number system is**
34. always the same as the highest digit used in the system
35. equal to the number of different digits used in the system
36. one less than the highest single digit number in the system
37. **What does design provides?**
38. Technology
39. Ecosystem
40. Technology and ecosystem
41. Digital revolution
42. **The pinMode() function configures a pin as either**
43. High or Low
44. Input or Output
45. On or Off
46. Inside or Outside
47. **Which bluetooth version enables low energy?**
48. Bluetooth 3.0
49. Bluetooth 4.0
50. Bluetooth 2.0
51. Bluetooth 1.0
52. **How many pair(s) of Rx/Tx pins are present in Arduino Uno for UART communication?**
53. 3
54. 2
55. 1
56. 0
57. **IoT is a paradigm that involves ubiquitous presence in the environment?**
58. True
59. False
60. **For a servo motor to run, the three pins required of the Arduino Uno are**
61. Vcc, GND, PWN
62. Vcc, GND, Analog
63. Vcc, PWN, Digital
64. Vcc, GND, Digital
65. **Which one(s) is/are analog out pin(s)?**
66. 3
67. 9
68. 12
69. 5
70. **A analog signal is one that can take on any number of value (instead of only binary values)**
71. True
72. False

|  |  |
| --- | --- |
| QN=1 | What is IoT? |
| a. | The Internet connecting everything |
| b. | The Internet controlling everything |
| c. | The Internet dectecting everything |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 1 |
| LO: | LO1 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=2 | Which of the following is application of IoT? |
| a. | Industrial robots |
| b. | Automatic production |
| c. | Smart homes, smart hospitals |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 2 |
| LO: | LO1 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=3 | An IoT structure consists of |
| a. | 3 components |

|  |  |
| --- | --- |
| b. | 4 components |
| c. | 5 components |
| d. | 6 components |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO2 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=4 | Name the components of an IoT structure. |
| a. | Devices (Things), Networking Infrastructure (Network and Cloud), Unit of Data Analysis and Processing (Services-creation and Solution Layers). |
| b. | Devices (Things), Connection Stations ([Gateways](https://vi.wikipedia.org/wiki/Gateway_(truy%E1%BB%81n_th%C3%B4ng))), Networking Infrastructure (Network and Cloud), Input/Output Devices. |
| c. | Devices (Things), Connection Stations ([Gateways](https://vi.wikipedia.org/wiki/Gateway_(truy%E1%BB%81n_th%C3%B4ng))), Networking Infrastructure (Network and Cloud), Unit of Data Analysis and Processing (Services-creation and Solution Layers), Input/Output Devices. |
| d. | **Devices** (Things), **Connection Stations** [(Gateways](https://vi.wikipedia.org/wiki/Gateway_(truy%E1%BB%81n_th%C3%B4ng))), **Networking Infrastructure** (Network and Cloud), **Unit of Data Analysis and Processing** (Services-creation and Solution Layers). |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO2 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=5 | What does IoT do in a smart home? |
| a. | Remotely monitor and control the temperature via a smartphone |
| b. | Control the temperature via infrared waves |
| c. | Control the sounds via Bluetooth |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 5 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=6 | Is IoT applied in smart agriculture? |
| a. | Yes |
| b. | No |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 7 \_Ebook 2 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=7 | What is AWS IoT Device Defender? |
| a. | A fully managed service that helps you secure your fleet of IoT devices |

|  |  |
| --- | --- |
| b. | A service that manages IoT devices |
| c. | A service that manipulates IoT devices |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 7 |
| LO: | LO4 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=8 | Why do we have to secure IoT? |
| a. | To protect users, devices and enterprises |
| b. | To protect devices and the Internet |
| c. | To protect companies that are attacked by hackers |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 7 |
| LO: | LO4 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=9 | Electronic circuits are included in IoT systems. |
| a. | True |
| b. | False |
| c. |  |

|  |  |
| --- | --- |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 7 |
| LO: | LO5 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=10 | What is Arduino? |
| a. | An open source hardware and software platform |
| b. | A control circuit board |
| c. | A microprocessor |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 6- book 2 |
| LO: | LO6 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=11 | What language is used for **Arduino programming**? |
| a. | C/C++ |
| b. | Python |
| c. | Java |
| d. |  |
| e. |  |

|  |  |
| --- | --- |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 9 |
| LO: | LO6 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=12 | Does Arduino have analog inputs? |
| a. | Yes |
| b. | No |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 9 |
| LO: | LO6 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=13 | Does Arduino have digital data output? |
| a. | Yes |
| b. | No |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |

|  |  |
| --- | --- |
| MARK: | 1 |
| UNIT: | 10 |
| LO: | LO7 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=14 | What are IoT sensors for? |
| a. | To collect data from the surrounding environment. |
| b. | To control devices from the surrounding environment. |
| c. | To adjust data from the surrounding environment. |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 12 |
| LO: | LO7 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=15 | Are IoT sensors and Network Interface Cards (NIC) the same? |
| a. | Yes |
| b. | No |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 13 |

|  |  |
| --- | --- |
| LO: | LO8 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=16 | Can engines be controlled remotely using IoT? |
| a. | Yes |
| b. | No |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 13 |
| LO: | LO8 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=17 | IoT can connect devices via Wifi network. |
| a. | True |
| b. | False |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 13 |
| LO: | LO9 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=18 | How do the program on a personal computer communicate with Arduino UNO? |
| a. | Via USB port |
| b. | Via HDMI port |
| c. | Via VGA port |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 15 |
| LO: | LO9 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=19 | What is Proteus software? |
| a. | Electronic circuit simulation software |
| b. | Circuit drawing software |
| c. | Civil circuit simulation software |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 16 |
| LO: | LO10 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=20 | Can Proteus software simulate programs running on Arduino board? |

|  |  |
| --- | --- |
| a. | Yes |
| b. | No |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 16 |
| LO: | LO10 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=1 | A program written in the Arduino IDE is called: |
| a. | a sketch |
| b. | a source code unit |
| c. | an IDE source |
| d. | an Arduino unit |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 2 |
| LO: | LO2 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=2 | By default, Arduino IDE consists of 2 functions. What are they? |
| a. | setup() and build() |
| b. | loop() and build() |

|  |  |
| --- | --- |
| c. | setup() and loop() |
| d. | build() and loop() |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO2 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=3 | Which leg of the LED is connected to GND? |
| a. | Long leg |
| b. | Short leg |
| c. | Either of the two legs |
| d. | There is no need to connect to GND |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=4 | The Arduino board has one built-in LED on which digital pin? |
| a. | 3 |
| b. | 9 |
| c. | 11 |
| d. | 13 |

|  |  |
| --- | --- |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=5 | How many analog inputs are there on the UNO board? |
| a. | 2 |
| b. | 4 |
| c. | 6 |
| d. | 8 |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 6 |
| LO: | LO4 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=6 | An analog signal is one that can take on any number of values (instead of binary values). |
| a. | True |
| b. | False |
| c. |  |
| d. |  |
| e. |  |

|  |  |
| --- | --- |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 6 |
| LO: | LO4 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=7 | A component has a resistance that changes with the light intensity that falls upon it. What is it called? |
| a. | Resistor |
| b. | Photoresistor |
| c. | Potentiometer |
| d. | Sensor |
| e. |  |
| f. | B |
| ANSWER: |  |
| MARK: | 1 |
| UNIT: | 9 |
| LO: | LO5 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=8 | Which one is a temperature sensor? |
| a. | LM35 |
| b. | Photoresistor |
| c. | RX330 |
| d. | Breadboard |
| e. |  |
| f. |  |

|  |  |
| --- | --- |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 11 |
| LO: | LO6 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=9 | A humidity sensor can be considered a simple |
| a. | thermometer |
| b. | barometer |
| c. | hydrometer |
| d. | hygrometer |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 13 |
| LO: | LO7 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=10 | How many times does setup function run in an Arduino program? |
| a. | 1 |
| b. | 2 |
| c. | 10 |
| d. | Forever |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |

|  |  |
| --- | --- |
| UNIT: | 3 |
| LO: | LO2 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=11 | How many times does loop function run in an Arduino program? |
| a. | 1 |
| b. | 4 |
| c. | 5 |
| d. | Forever |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO2 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=12 | To open Serial Monitor, what keyboard shortcut do you use? |
| a. | Ctrl-Shift-L |
| b. | Ctrl-Shift-M |
| c. | Ctrl-M |
| d. | Shift-M |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 5 |
| LO: | LO3 |

|  |  |
| --- | --- |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=13 | Which of the following is an actuator? |
| a. | Button |
| b. | Servo SG90 |
| c. | Keypad |
| d. | IR remote control |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 12 |
| LO: | LO9 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=14 | Choose the odd one: |
| a. | Proteus |
| b. | Fritzing |
| c. | Photoshop |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=15 | To control the brightness of an LED, we use the function: |
| a. | analogWrite(pin, value) |
| b. | digitalWrite(pin, HIGH) |
| c. | digitalWrite(pin, LOW) |
| d. | digitalWrite(pin, HIGH -> LOW) |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 14 |
| LO: | LO7 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=16 | The function delay(1000) delays: |
| a. | 1000 s |
| b. | 1000 ms |
| c. | 10 s |
| d. | 1 s |
| e. |  |
| f. |  |
| ANSWER: | BD |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=17 | Which one is not a sensor? |
| a. | LM35 |

|  |  |
| --- | --- |
| b. | HC-SR04 |
| c. | A buzzer |
| d. | A motion detector |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 15 |
| LO: | LO10 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=18 | Which is not an IoT application? |
| a. | Smart city |
| b. | Smart home |
| c. | Connected cars |
| d. | Web browsers |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 2 |
| LO: | LO1 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=19 | Which one is not a “smart city” yet? |
| a. | Barcelona |
| b. | Seoul |
| c. | Da Nang |

|  |  |
| --- | --- |
| d. | Singapore |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=20 | What can be things in the Internet of things? |
| a. | People |
| b. | Animals |
| c. | Electronic devices |
| d. | Computers |
| e. | All of the physical objects embedded with electronics, software, sensors, and network connectivity, which enables these objects to collect and exchange data |
| f. |  |
| ANSWER: | E |
| MARK: | 1 |
| UNIT: | 2 |
| LO: | LO1 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=1 | What is IoT? |
| a. | A system of interrelated computing devices, mechanical and digital machines, objects, animals or people |
| b. | A system of physical things that are provided with unique identifiers (UIDs) |

|  |  |
| --- | --- |
| c. | A system of things that are able to transfer data over a network without requiring human-to-human or human-to-computer interaction |
| d. | All the other answers are correct |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 1 |
| LO: | LO1 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=2 | Which is not an IoT application? |
| a. | Smart city |
| b. | Smart home |
| c. | Connected cars |
| d. | Web browsers |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 1 |
| LO: | LO1 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=3 | Which one is not a “smart city” yet? |
| a. | Barcelona |
| b. | Seoul |
| c. | Da Nang |

|  |  |
| --- | --- |
| d. | Singapore |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 2 |
| LO: | LO1 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=4 | Internet of things is a kind of artificial intelligence. |
| a. | True |
| b. | False |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 1 |
| LO: | LO1 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=5 | The huge numbers of devices connected to the Internet of things have to communicate automatically, not via humans. What is this called? |
| a. | Bot to Bot (B2B) |
| b. | Skynet |
| c. | InterCloud |

|  |  |
| --- | --- |
| d. | Machine to Machine (M2M) |
| e. | Automation |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 2 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=6 | What is the name of the first recognized IoT device? |
| a. | Smart Watch |
| b. | Radio |
| c. | Video Game |
| d. | ATM |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 2 |
| LO: | LO2 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=7 | Among people and machines, how many types of connection are there in IoT? |
| a. | 1 |
| b. | 2 |
| c. | 3 |
| d. | 4 |
| e. |  |

|  |  |
| --- | --- |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO2 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=8 | What can be things in the Internet of things? |
| a. | People |
| b. | Animals |
| c. | Electronic devices |
| d. | Computers |
| e. | All of the physical objects embedded with electronics, software, sensors, and network connectivity, which enables these objects to collect and exchange data |
| f. |  |
| ANSWER: | E |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO2 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=9 | Which is not true about IPv4? |
| a. | An IPv4 address is made up of 32 binary bits |
| b. | It consists of four sets of numbers separated by periods |
| c. | One example of IPv4 is 172.18.**256**.9 |
| d. | It is the fourth version of the Internet Protocol |
| e. |  |

|  |  |
| --- | --- |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=10 | Which element does IoT lack? |
| a. | Security |
| b. | People |
| c. | Things |
| d. | Process |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=11 | Which is not an IoT protocols? |
| a. | MQTT |
| b. | XMPP |
| c. | CoAP |
| d. | HTTP |
| e. |  |
| f. |  |
| ANSWER: | D |

|  |  |
| --- | --- |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=12 | What is a firewall in computer networks? |
| a. | A system designed to prevent unauthorized access |
| b. | A web browser |
| c. | The physical boundary of network |
| d. | The Network Operating System |
| e. | A software to catch viruses |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO4 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=13 | Standard port number for secure MQTT is: |
| a. | 1883 |
| b. | 8000 |
| c. | 8883 |
| d. | 8888 |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 4 |

|  |  |
| --- | --- |
| LO: | LO4 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=14 | What is Secure Shell (SSH)? |
| a. | A router |
| b. | A firewall |
| c. | The physical boundary of network |
| d. | A network protocol |
| e. | Python Shell |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO4 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=15 | A program written in the Arduino IDE is called: |
| a. | sketch |
| b. | source code |
| c. | IDE source |
| d. | Arduino unit |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO5 |

|  |  |
| --- | --- |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=16 | It starts with a /\* and continues until a \*/. What is it? |
| a. | A comment |
| b. | An instruction |
| c. | A sketch |
| d. | An outline |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO5 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=17 | By default, Arduino IDE consists of 2 functions. What are they? |
| a. | setup() and build() |
| b. | loop() and build() |
| c. | setup() and loop() |
| d. | build() and loop() |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO5 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=18 | In the Arduino IDE, which command is called once when the program starts? |
| a. | output() |
| b. | loop() |
| c. | input() |
| d. | setup() |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO5 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=19 | Which leg of the LED is connected to GND? |
| a. | Long leg |
| b. | Short leg |
| c. | Either of the two |
| d. | There is no need to connect |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO6 |
| MIX CHOICES: | no |

|  |  |
| --- | --- |
| QN=20 | The Arduino board has one built-in LED on which digital pin? |
| a. | 3 |

|  |  |
| --- | --- |
| b. | 13 |
| c. | 11 |
| d. | 9 |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 5 |
| LO: | LO6 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=21 | How many digital pins are there on the UNO board? |
| a. | 12 |
| b. | 14 |
| c. | 16 |
| d. | 20 |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 6 |
| LO: | LO6 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=22 | A digital signal is one that can take on any number of values. |
| a. | True |
| b. | False |
| c. |  |

|  |  |
| --- | --- |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 6 |
| LO: | LO6 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=23 | How many analog inputs are there on the UNO board? |
| a. | 2 |
| b. | 4 |
| c. | 6 |
| d. | 8 |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 7 |
| LO: | LO7 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=24 | An analog signal is one that can take on any number of values (instead of binary values) |
| a. | True |
| b. | False |
| c. |  |
| d. |  |

|  |  |
| --- | --- |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 8 |
| LO: | LO7 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=25 | A component has a resistance that changes with the light intensity that falls upon it. What is it called? |
| a. | Resistor |
| b. | Photoresistor |
| c. | Potentiometer |
| d. | Sensor |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 6 |
| LO: | LO8 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=26 | Which one is a temperature sensor? |
| a. | LM35 |
| b. | Photoresistor |

|  |  |
| --- | --- |
| c. | RX350 |
| d. | Breadboard |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 6 |
| LO: | LO8 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=27 | A component has a resistance that changes with the light intensity that falls upon it. What is it called? |
| a. | Resistor |
| b. | Photoresistor |
| c. | Potentiometer |
| d. | Sensor |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 6 |
| LO: | LO8 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=28 | It is a sequence of instructions that is continually repeated until a certain condition is reached. What is it? |
| a. | A loop |

|  |  |
| --- | --- |
| b. | A program |
| c. | An algorithm |
| d. | A block |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 8 |
| LO: | LO9 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=29 | To open Serial Monitor, what keyboard shortcut do you use? |
| a. | Ctrl-Shift-L |
| b. | Ctrl-Shift-M |
| c. | Ctrl-M |
| d. | Shift-M |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO9 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=30 | How many times setup function runs in Arduino IDE: |
| a. | 1 |

|  |  |
| --- | --- |
| b. | 2 |
| c. | 10 |
| d. | None of the above |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO9 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=31 | How many times loop function runs in Arduino IDE: |
| a. | 1 |
| b. | 4 |
| c. | 5 |
| d. | forever |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO9 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=32 | What are sensors? |
| a. | Devices, modules, or subsystems that detect events or changes in its environment and send the information to other electronics |
| b. | Indispensable enablers of IoT |

|  |  |
| --- | --- |
| c. | Devices which converts physical parameters like temperature, motion etc…  into the electrical signals |
| d. | All the other answers are correct |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 7 |
| LO: | LO8 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=33 | Which of the following is an actuator? |
| a. | Button |
| b. | Servo SG90 |
| c. | Keypad |
| d. | IR remote control |
| e. | All the other answers are correct |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 7 |
| LO: | LO8 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=34 | Which of the following is the best for drawing IoT circuits? |
| a. | Photoshop |
| b. | Fritzing |
| c. | Paint 3D |

|  |  |
| --- | --- |
| d. | Corel |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 9 |
| LO: | LO10 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=35 | What is it? |
| a. | An ultrasonic sensor |
| b. | A distance detector |
| c. | A sound sensor |
| d. | A speaker |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 9 |
| LO: | LO10 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=36 | Does Fritzing do simulation? |

|  |  |
| --- | --- |
| a. | Yes |
| b. | No |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 10 |
| LO: | LO10 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=37 | To control the brightness of an LED, we use the function: |
| a. | analogWrite(pin, value) |
| b. | digitalWrite(pin, HIGH); |
| c. | digitalWrite(pin, LOW); |
| d. | digitalWrite(pin, HIGH → LOW); |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 7 |
| LO: | LO7 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=38 | The function delay(1000) actually delays: |
| a. | 1000s |
| b. | 100s |
| c. | 10s |
| d. | 1s |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 5 |
| LO: | LO5 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=39 | Which programming language can be used for controlling of Arduino? |
| a. | C/C++ |
| b. | Assembly Language |
| c. | Java |
| d. | Any Language |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 5 |
| LO: | LO5 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=40 | Which one is not a sensor? |
| a. | LM35 |

|  |  |
| --- | --- |
| b. | A hygrometer |
| c. | HC-SR04 |
| d. | A buzzer |
| e. | A motion detector |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 10 |
| LO: | LO10 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=41 | A potentiometer is a(n) ................ |
| a. | sensor |
| b. | voltage |
| c. | resistor |
| d. | LED |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 10 |
| LO: | LO10 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=42 | What does IDE stand for? |
| a. | In Deep Environment |
| b. | Integrated Development Environment |
| c. | Internal Deep Escape |

|  |  |
| --- | --- |
| d. | Insight Download Environment |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 2 |
| LO: | LO2 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=43 | What is wrong with the following  /\*Turns on an LED on for one second, then off for one second, repeatedly. This example code is in the public domain.\*/  int led = 13; void setup() {  pinMode(led, INPUT);  }  void loop() { digitalWrite(led, HIGH); delay(1000); digitalWrite(led, LOW); delay(1000);  } |
| a. | All the code |
| b. | Void |
| c. | High and Low |
| d. | Low and High |
| e. |  |

|  |  |
| --- | --- |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO5 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=44 | Which function can be used to drive a motor at various speeds? |
| a. | analogWrite() |
| b. | digitalWrite() |
| c. | analogRead() |
| d. | digitalRead() |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 7 |
| LO: | LO7 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=45 | After a call to analogWrite(), the pin will generate a steady rectangular wave of the specified duty cycle until the next call to on the same pin. |
| a. | analogWrite() |
| b. | digitalRead() |
| c. | digitalWrite() |
| d. | Either of the above |
| e. |  |
| f. |  |

|  |  |
| --- | --- |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 7 |
| LO: | LO7 |
| MIX CHOICES: | no |

|  |  |
| --- | --- |
| QN=46 | How would you define the Internet of Things? |
| a. | The intelligent connection of people, process, data and things |
| b. | The day when computers take control of the world |
| c. | None of these |
| d. | Both of these |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 1 |
| LO: | LO1 |
| MIX CHOICES: | no |

|  |  |
| --- | --- |
| QN=47 | The pinMode() function configures a pin as either an input or an output. |
| a. | True |
| b. | False |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |

|  |  |
| --- | --- |
| MARK: | 1 |
| UNIT: | 8 |
| LO: | LO9 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=48 | IoT is built on |
| a. | cloud computing |
| b. | networks of data-gathering sensors |
| c. | both of these |
| d. | none of these |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 2 |
| LO: | LO2 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=49 | Which among the given statements holds true about Big Data? |
| a. | Data set so large or complex that traditional processing applications are inadequate |
| b. | The most important data that comes into business |
| c. | Both of these |
| d. | None of these |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |

|  |  |
| --- | --- |
| UNIT: | 4 |
| LO: | LO4 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=50 | What is the size of an IPv6 address? |
| a. | 32 bits |
| b. | 64 bits |
| c. | 128 bits |
| d. | 256 bits |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO3 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=1 | **Which is not an IoT protocols?** |
| a. | MQTT |
| b. | XMPP |
| c. | CoAP |
| d. | HTTP |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 2 |

|  |  |
| --- | --- |
| LO: | LO3 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=2 | **A humidity sensor can be considered a simple** |
| a. | thermometer |
| b. | barometer |
| c. | hydrometer |
| d. | hygrometer |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO5 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=3 | **The function delay(1000) actually delays:** |
| a. | 1000s |
| b. | 100s |
| c. | 10s |
| d. | 1s |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO9 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=4 | **To control the brightness of an LED, we use the function:** |
| a. | analogWrite(pin, value) |
| b. | digitalWrite(pin, HIGH); |
| c. | digitalWrite(pin, LOW); |
| d. | digitalWrite(pin, HIGH -> LOW); |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 5 |
| LO: | LO7 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=5 | **Which of the following is an actuator?** |
| a. | Button |
| b. | Servo SG90 |
| c. | Keypad |
| d. | IR remote control |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 8 |
| LO: | LO5 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=6 | **How many times does loop function run in Arduino IDE?** |

|  |  |
| --- | --- |
| a. | 1 |
| b. | 3 |
| c. | 5 |
| d. | Forever |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO9 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=7 | **An analog signal is one that can take on any number of values (instead of binary values).** |
| a. | True |
| b. | False |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO7 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=8 | **A component has a resistance that changes with the light intensity that falls upon it. What is it called?** |

|  |  |
| --- | --- |
| a. | Resistor |
| b. | Photoresistor |
| c. | Potentiometer |
| d. | Sensor |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 7 |
| LO: | LO8 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=9 | **Which leg of the LED is connected to GND?** |
| a. | Long leg |
| b. | Short leg |
| c. | Either of the two legs |
| d. | There is no need to connect to GND |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 2 |
| LO: | LO6 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=10 | **The Arduino board has one built-in LED on which digital pin?** |
| a. | 3 |
| b. | 11 |

|  |  |
| --- | --- |
| c. | 13 |
| d. | 9 |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO6 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=11 | **By default, Arduino IDE consists of 2 functions. What are they?** |
| a. | setup() and build() |
| b. | loop() and build() |
| c. | setup() and loop() |
| d. | build() and loop() |
| e. |  |
| f. |  |
| ANSWER: | C |
| MARK: | 1 |
| UNIT: | 2 |
| LO: | LO12 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=12 | **In the Arduino IDE, which command is called once when the program starts?** |
| a. | output() |
| b. | loop() |
| c. | input() |
| d. | setup() |

|  |  |
| --- | --- |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 3 |
| LO: | LO9 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=13 | **How many digital pins are there on the UNO board?** |
| a. | 12 |
| b. | 14 |
| c. | 16 |
| d. | 20 |
| e. |  |
| f. |  |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO11 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=14 | **Which of the following is the best for drawing IoT circuits?** |
| a. | Photoshop |
| b. | Fritzing |
| c. | Paint 3D |
| d. | Corel |
| e. |  |
| f. |  |

|  |  |
| --- | --- |
| ANSWER: | B |
| MARK: | 1 |
| UNIT: | 8 |
| LO: | LO10 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=15 | **Does Fritzing do simulation?** |
| a. | Yes |
| b. | No |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 6 |
| LO: | LO10 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=16 | **What can be things in the Internet of things?** |
| a. | People |
| b. | Animals |
| c. | Electronic devices |
| d. | Computers |
| e. | All of the physical objects embedded with electronics, software, sensors, and network connectivity, which enables these objects to collect and exchange data |
| f. |  |
| ANSWER: | E |

|  |  |
| --- | --- |
| MARK: | 1 |
| UNIT: | 2 |
| LO: | LO2 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=17 | **Which element does IoT likely lack?** |
| a. | Security |
| b. | People |
| c. | Things |
| d. | Processes |
| e. |  |
| f. |  |
| ANSWER: | A |
| MARK: | 1 |
| UNIT: | 4 |
| LO: | LO4 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=18 | **What is IoT?** |
| a. | A system of interrelated computing devices, mechanical and digital machines, objects, animals or people |
| b. | A system of physical things that are provided with unique identifiers (UIDs) |
| c. | A system of things that are able to transfer data over a network without requiring human-to-human or human-to-computer interaction |
| d. | A LAN |
| e. |  |
| f. |  |
| ANSWER: | ABC |

|  |  |
| --- | --- |
| MARK: | 1 |
| UNIT: | 1 |
| LO: | LO1 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=19 | **Which is not an IoT application?** |
| a. | Smart city |
| b. | Smart home |
| c. | Connected cars |
| d. | Web browsers |
| e. |  |
| f. |  |
| ANSWER: | D |
| MARK: | 1 |
| UNIT: | 1 |
| LO: | LO1 |
| MIX CHOICES: | yes |

|  |  |
| --- | --- |
| QN=20 | **An interrupt is a signal that tells the processor to immediately stop what it is doing and handle some high priority processing. That high priority processing is called** |
| a. | an interrupt handler |
| b. | a trigger |
| c. | a terminator |
| d. | an interruption |
| e. |  |
| f. |  |
| ANSWER: | A |

|  |  |
| --- | --- |
| MARK: | 1 |
| UNIT: | 14 |
| LO: | LO13 |
| MIX CHOICES: | yes |

Secret-key encryption is also known as

A.Asymmetric encryption B.Symmetric encryption C.Secret-encryption

D.Private encryption D.Private encryption

When you have a potential IoT idea you want to develop properly, what must you first define? A.Its Unique Value Proposition

1. Problem it sets out to solve
2. Route to market
3. How it will work B.Problem it sets out to solve

Is it useful completing a business plan for a personal or in-house IoT product? A.Yes

B.No A.Yes

What is Fog computing?

1. It is a type of computing that enhances P2P applications.
2. It is a type of computing that sends controller data to a sensor.
3. It is a type of computing that disperses servers and services globally in distributed data centers.
4. It is a type of computing where services are hosted where they are used, such as at the network edge or with end devices. D.It is a type of computing where services are hosted where they are used, such as at the network edge or with end devices.

What is an example of cloud computing?

A.A continuous interaction between people, processes, data, and things.

B.A service that offers on-demand access to shared resources.

C.A network infrastructure that spans a large geographic area.

D.An architectural style of the World Wide Web. B. A service that offers on-demand access to shared resources.

What is used to uniquely identify devices connected to the Internet? A.gateway address

B.IP address

C.device name

D.URL B.IP address

Which word or phrase most accurately sums up the main benefit of IoT technology? A.Accuracy

B.Efficiencies C.Energy use

D.Response time D.Response time

How can IoT help combat climate change? A.Smart devices working to reduce energy use. B.Prevention of methane release from cows.

C.Free internet in cities to help people operate in the city more easily.

D.Predictive maintenance of wind turbines, preventing burn out. A.Smart devices working to reduce energy use.

Which of the following disruptions - caused by vehicles becoming fully autonomous - were the people surveyed most worried about?

1. Reduced private ownership of cars.
2. Less traffic lights on roads.
3. Reduced number of driving jobs.
4. Less space needed for parking.
5. Reduced vehicle emissions. C.Reduced number of driving jobs.

Smart cities use the Internet of Things to improve the quality of citizens' lives. True or False? A.True

B.False A.True

Which of the following is one of the ways IoT monitoring of dairy cows improves dairy farming? A.The system tells you when cows are ready for milking, saving time spent on monitoring the herd.

1. The system can sound alarms when cows roam into neighbouring paddocks.
2. The system notices the cows that are unwell, so they are treated quicker, which speeds up recovery time.
3. The system results in more milk from the cows' udders for each milking.

C.The system notices the cows that are unwell, so they are treated quicker, which speeds up recovery time.

What are the descriptors for Big Data? (as coined by IBM) A.Speed, True, Diversity, Amount

B.Vast, Velocity, Variance, Verified

C.Volume, Velocity, Variety, Veracity C.Volume, Velocity, Variety, Veracity

Which of the following functions does NOT apply to a typical data centre's services?

1. Data storage
2. Data management
3. Data analysis
4. Data security
5. Data generation E.Data generation

Which terminology deals with the excitation or stimulus applied to a system from an external source, for the generation of an output?

1. Input signal
2. Output signal
3. Error signal
4. Analogue signal
5. Feedback signal A.Input signal

Closed-loop Systems use feedback where a portion of the output signal is fed back to the input to reduce errors and improve stability.

1. True
2. False A.True

Which challenge comes under securing the information? A.Signaling

B.Security C.Presence detection

D.Power consumption B.Security

Which challenge comes under IoT devices, reliable bidirectional signaling. A.Signaling

B.Security C.Presence detection

D.Power consumption A.Signaling (\*) C.Presence detection

Which challenge comes when we use many devices on the same network? A.Signaling

B.Security C.Presence detection

D.Power consumption D.Power consumption

Which of the following issues are considered in IoT? A.Security Issue

B.Reliablity Issue C.Standard Issue

D.All issues D.All issues

IoT is a paradigm that involves ubiquitous presence in the environment. A.True

B.False A.True

IoT stands for A.Industrial Internet of Things B.Internet Internet of Things C.Intelligence Internet of Things

D.Internal Internet of Things A.Industrial Internet of Things

Which possibility ensures load balancing and peak levelling of energy consumption? A.Transportation and logistics

B.Energy and utilities C.Automotive

D.Connected supply chain B.Energy and utilities

Which possibility connects the production line to suppliers? A.Transportation and logistics

B.Energy and utilities C.Automotive

D.Connected supply chain D.Connected supply chain

Which possibility is highest contributor to cost overhead for manufacturing facilities? A.Transportation and logistics

1. Energy and utilities
2. Plant control flow operation
3. Energy management and resource optimization D.Energy management and resource optimization

will enable the humans to access, control and manage the operation. A.IoT

B.Bigdata C.Network

D.Communication A.IoT

In the embedded devices and objects working under IoT are resource constrained. A.Health

B.Industry C.Home

D.Information system D.Information system

What type of networks is interacting under IoT? A.Heterogeneous only

1. Homogeneous Only
2. Both hetero and homogeneous
3. Neither hetero nor Homo A.Heterogeneous only

Managing of resources can be done by implementing A.Protocols

B.Algorithms C.Networks

D.Protocols and algorithms D.Protocols and algorithms

Resource management will elaborate the key aspects of A.Industrial managements

1. Energy management
2. Network management
3. Information management C.Network management

Which category finds an increase in applications targeting health and fitness? A.Personal IoT

B.Group IoT C.Community IoT

D.Industrial IoT A.Personal IoT

Which category is used in the context of connected cars? A.Personal IoT

B.Group IoT C.Community IoT

D.Industrial IoT B.Group IoT

Which category could be used by citizens to contribute to a smart city? A.Personal IoT

B.Group IoT C.Community IoT

D.Industrial IoT C.Community IoT

Which category is used for business to consumer process? A.Personal IoT

B.Group IoT C.Community IoT

D.Industrial IoT D.Industrial IoT

Voice recognition software and virtual assistant programs offer for and A.Communication

B.Communication and Entertainment C.Entertainment

D.Communication and Software B.Communication and Entertainment

is particularly appealing when the human's hands or eye are otherwise occupied A.Voice recognition

B.Sound recognition C.Amplitude recognition

D.Frequency recognition A.Voice recognition

Voice telephony is an efficient means of with machines that can listen. A.Mono-directional voice communication

B.Bi-directional voice communication C.Voice recognition

D.Both bi directional and mono directional B.Bi-directional voice communication

Without IoT devices can easily lead to catastrophe. A.Software

B.Management system C.Cloud

D.Devices B.Management system

What IoT collects? A.Human generated data

1. Sensor data
2. Machine generated data
3. Device data C.Machine generated data

Which requires data stream management? A.Bigdata

B.IoT

C.Bigdata & IoT

D.Device data B.IoT

Describe IoT architecture

1. Application, Decision Support Tools, Big Data Stores, Network and Telecommunication Equipment, Connected devices
2. None of them

C.Big Data, Monitors, Tele-communication, Remote control

D.Application, Protocols, Electricity, Hardware, Connected devices A.Application, Decision Support Tools, Big Data Stores, Network and Telecommunication Equipment, Connected devices

Internet of Things represents only software integration or only internet not Hardware integration...

1. True
2. False B.False

Big Data is not a part of IoT. A.True

B.False B.False

Smart City, and Smart Energy Management Systems are the part of Internet of Things.

A.True B.False

A.True

What are the three dominant technological forces which are accelerating the Internet of Things?

1. Mobile, Cloud, Engagement
2. Data, Storage, Interaction
3. Data, Cloud, Engagement
4. Mobile, Storage, Interaction

C.Data, Cloud, Engagement

The Internet of Things will result in new innovative applications and services led by today's technology, and this will be in the mind of the beholder on how to leverage this?

1. True
2. False A.True

The proliferation of low-cost smaller mobile devices is an example of a for the Internet of Things?

A.All of these B.Challenge C.Implication

D.Driver D.Driver

Data sharing is a topic in today's society? A.Prominent

B.Hindering C.Daunting

D.Intriguing A.Prominent A system must include .

A.an input, an output and a process. B.something to do with a form of transport.

C.a microprocessor.

D.fuel, water and electricity. A.an input, an output and a process.

The IoT operates at scale A.Machine

B.Human C.Device

D.Sensor A.Machine

Fritzing is open source, free software. A.True

B.False A.True

Which of these is NOT electronic equipment you can use for IoT prototyping? A.Arduino microcontroller

B.Raspberry Pi microprocessor C.Blackberry router

D.LED C.Blackberry router

What does the 'things' in Internet of Things refer to? A.Smart phones and tablets

B.Machines and vehicles that operate themselves

C.A physical object with embedded electronics C.A physical object with embedded electronics

The IoT increases the potential for machines to make smart decisions based on collected data, and to act on them, leaving people (apart from the original programmers and those setting the parameters) out of the loop. This is called M2M. Select an example of M2M from the descriptions below.

A.A sensor on a milking cow indicates that she is moving in a way that suggests she in on heat and will be receptive to insemination. She is placed on a watch list and the herd manager chooses to draught her out, after milking, for insemination.

B.An autonomous ambulance on an emergency call approaches an intersection and communicates with the signals to change the lights from red to green, to allow smooth passage through the intersection.

C.Sensors on a bridge detect strain in bridge joints. Areas of concern are flagged with the maintenance team who can respond to specific problems, rather than carrying out lengthy inspections. B.An autonomous ambulance on an emergency call approaches an intersection and communicates with the signals to change the lights from red to green, to allow smooth passage through the intersection.

What protocol is good for communication of IoT devices with restricted power and low data rates over a range of a few kilometres ?

A.Bluetooth B.Zigbee C.LoRaWAN D.4G

E.WiFi C.LoRaWAN

What is the main advantage of IPv6, and why does it suit IoT?

1. IPv6 provides many more IP addresses, which increases the potential number of hosts and amount of data.
2. IPv6 is more up to date protocol with leaner mechanisms which suit modern microprocessors.
3. IPv6 is faster and can carry more data. A.IPv6 provides many more IP addresses, which increases the potential number of hosts and amount of data.

Which of these media is currently NOT used in communicating data? A.Wireless / electromagnetic waves

B.Hydrogen cables / electron ionisation C.Fibre optics / pulses of light

D.Copper cables / electrical signals B.Hydrogen cables / electron ionisation

Communication in a network is carried via a ? A.Sensor

B.Router C.Medium D.Device

E.Controller C.Medium

When you upload a photo from your camera to a social media site, what kind of path is the information likely to travel?

1. End device -> Modem -> Controller -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server
2. End device -> Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's server -> social media site's ISP
3. End device -> Controller -> Modem -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server
4. Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's ISP -> social media site's server -> End device C.End device -> Controller -> Modem -

> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server

Why will IoT put a strain on internet infrastructure? A.The unprecedented amount of data

B.The variety of IoT protocols

C.The large number of unsecured devices connecting to the internet A.The unprecedented amount of data

Sometimes many devices share the same set of wires. This connection mode is referred to as a

? A.Train B.Bus

C.Multi-point connection B.Bus

In a communications network, peers can send messages to:

1. Peers in the same layer only
2. Peers in any layer
3. Peers in the layers above and below only A.Peers in the same layer only

What is another way of thinking of the DTE? A.As a Modem

B.As a Computer

C.As a Router B.As a Computer

In telecommunications, RS-232 is used for communication transmission of data. A.serial

B.parallel A.serial

Bluetooth uses low power radio waves in the frequency range of ...?

A.2.4 - 2.485Hz

B.2.4 - 2.485GHz

C.2.4 - 2.485MHz B.2.4 - 2.485GHz

Bluetooth has three classes, namely:

1. Industrial, Scientific, Medical
2. Class 1, Class 2 and Class 3 (100m, 10m and 1m range)
3. I, M and R (Industrial, Mobile and Rarely used) B.Class 1, Class 2 and Class 3 (100m, 10m and 1m range)

Bluetooth is named after:

1. The scientist who invented it, who had blue teeth
2. The company that invented it, Ericsson's founder Harald Bluetooth
3. Danish King, Harald Gormsson who promoted communication between Denmark and Norway

C.Danish King, Harald Gormsson who promoted communication between Denmark and Norway

The huge numbers of devices connected to the Internet of things have to communicate automatically, not via humans. What is this called?

1. Bot to Bot (B2B)
2. Machine to Machine (M2M) C.InterCloud

D.Skynet B.Machine to Machine (M2M)

Which characteristics involve the facility the thing to respond in an intelligent way to a particular situation?

A.Intelligence B.Connectivity C.Dynamic Nature

D.Enormous Scale A.Intelligence

empowers IoT by bringing together everyday objects. A.Intelligence

B.Connectivity C.Dynamic Nature

D.Enormous Scale B.Connectivity

The collection of data is achieved with changes. A.Intelligence

B.Connectivity C.Dynamic Nature

D.Enormous Scale C.Dynamic Nature

The number of devices that need to be managed and that communicate with each other will be much larger.

A.Intelligence B.Connectivity C.Dynamic Nature

D.Enormous Scale D.Enormous Scale

a cellular network is expensive, especially with many IoT devices. A.Signaling

B.Security C.Bandwidth

D.Power consumption C.Bandwidth

Communication between and is encrypted for security. A.Cloud and device

1. End user and data center
2. Network and device
3. Cloud and Network B.End user and data center

The embedded devices will form network A.ATM

B.Ethernet C.FDDI

D.Ad-hoc D.Ad-hoc

are used to overcome the challenges of managing the resources of the IoT. A.Clustering

B.Software agents C.Synchronization techniques

D.Cluster, Software agent, and Synchronization techniques D.Cluster, Software agent, and Synchronization techniques

BAN stands for A.Body Area Network

1. Brain Area Network
2. Body Android Network
3. Brain Android Network

A.Body Area Network

NFC stands for

1. Near Fast Communication
2. Near Field Communication
3. Near Field Customer
4. Near Field Connection

B.Near Field Communication

Phones act as actuators too. A.True

B.False A.True

WiFi uses how much frequency? A.2.2GHz

B.3GHz C.3.5GHz

D.2.4GHz D.2.4GHz

Bluetooth will transmit the data over the frequency band

A.2.4 to 2.7 GHz

B.2.4 to 3 GHz

C.2.4 to 2.485 GHz

D.2.4 to 2.6 GHz C.2.4 to 2.485 GHz

Bluetooth operates at short distances. A.True

B.False A.True

Bluetooth will drain battery life. A.True

B.False A.True

What data security concerns do IoT devices pose?

1. The device being hijacked to harm another device or system
2. Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption
3. The devices being small and embedded into objects makes them easily vandalised or stolen

B.Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption

How does the addition of data due to IoT create privacy issues?

1. Systems struggle to deal with the large amount of data so data gets 'stuck outside security' waiting to be dealt with
2. Multiple data sets each stripped of identification initially can be combined as a whole and reveal identity
3. More data going through security measures inevitably means more security breakdowns and data leakage
4. IoT devices generally connect wirelessly creating additional harder to secure channels for data hijack B.Multiple data sets each stripped of identification initially can be combined as a whole and reveal identity

Which of the following is NOT a security measure? A.Encryption

B.Password C.Firewall

D.Firmware D.Firmware

How does fog computing reduce security risks? A.It acts on IoT data closer to the source

1. It creates unclear connections that are difficult to intercept
2. It reduces the need for remote management
3. It scrambles electronic signals and encrypts all data A.It acts on IoT data closer to the source

The resistance of a heater coil is 10 Ohms and the input voltage is 120V. What is the current?

A.12 amps B.1,200 amps

C.0.083 amps A.12 amps

If you need to increase the current through a resistor in a circuit, what would you do? A.Decrease the voltage applied to the resistor.

1. Increase the voltage applied to the resistor.
2. Increase the room temperature.
3. Increase the value of the resistor.
4. All of the above. B.Increase the voltage applied to the resistor.

A DC motor requires a current of 10 Amperes to operate at full speed. The battery attached supplies 12 Volts. What resistance is required in the circuit to provide exactly 10 A to the motor?

A.12 ohms

B.120 ohms

C.1.2 ohms B.120 ohms

When current flows through a resistor, the power involved produces heat. What measures can be taken to reduce the generation of heat inside a computer?

1. Reduce the voltage from the power supply.
2. Increase the total resistive value in the circuit.
3. Increase the physical size of resistors.
4. Use capacitors on the output of the power supply.
5. All of the above. A.Reduce the voltage from the power supply.

The combination of conditioning plus the element being controlled by the computer is called a

?

A.DAC

B.Instrumentation amplifier C.Motor

D.Actuator

D.Actuator

The combination of a transducer with its signal conditioner is called a

?

A.Instrumentation Amplifier B.Sensor

C.Thermistor

D.ADC B.Sensor

What is the microcontroller used in Arduino UNO? A.ATmega328p

B.ATmega2560 C.ATmega32114

D.AT91SAM3x8E A.ATmega328p

What does p refer to in ATmega328p?

A.Production B.Pico-Power C.Power-Pico

D.Programmable on chip B.Pico-Power

Arduino shields are also called as

A.Extra peripherals B.Add on modules C.Connectivity modules

D.Another Arduinos B.Add on modules

Which is the software or a programming language used for controlling of Arduino? A.Assembly Language

B.C Languages C.JAVA

D.Any Language D.Any Language

A program written with the IDE for Arduino is called

A.IDE source B.Sketch C.Cryptography

D.Source code B.Sketch

Arduino IDE consists of 2 functions. What are they? A.Build() and loop()

1. Setup() and build()
2. Setup() and loop()
3. Loop() and build() and setup() C.Setup() and loop()

How many digital pins are there in the UNO board? A.14

B.12 C.16

D.20 A.14

board allows sewn into clothing.

A.UNO

B.RedBoard

C.LilyPad

D.Mega C.LilyPad

There is efficiency gains from all sorts of equipment. A.Implementation

B.Analogous C.Evolution

D.Digitization D.Digitization

A provider which produces 99 percent uptime

1. Security issues
2. Network Issues C.Programming issue

D.Memory issue B.Network Issues

With physical security, the stakes are incredibly

1. Very high B.Low C.Very low

D.High D.High

Which digit does the colour yellow denote on a resistor colour band? A.2

B.4

C.7

D.3 B.4

A 47 Kohm resistor would have which colours on its first three bands? A.red, white, blue

1. yellow, violet, white
2. orange, yellow, violet
3. yellow, violet, orange D.yellow, violet, orange

Which digit does the colour orange denote on a resistor colour band? A.9

B.1

C.6

D.3 D.3

A resistor's first three colour bands are red, yellow and black. What is its value?

A.240 ohms

B.24 ohms

C.32 ohms

D.420000 ohms B.24 ohms

Which digit is represented by a blue band on a resistor? A.4

B.8

C.6

D.9 C.6

Which digit is represented by a black band on a resistor? A.100

B.1 C.1000

D.0 D.0

A resistor's first three colour bands are brown, green and red. What is its value? A.1500 ohms

B.250 ohms C.2000 ohms

D.510 ohms A.1500 ohms

Which colour represents the digit 6 in the resistor colour code? A.red

B.blue C.pink

D.green B.blue

Which of these colours is NOT used in the resistor value colour code? A.black

B.turquoise C.white

D.violet B.turquoise A micro-controller is...

1. small CPU made of transistors and conductors of heat and sound sensor
2. portable circuits capable of making other circuits
3. small computer on a single integrated circuit containing a processor core, memory, and programmable input/output peripherals
4. small chip made of silver A.small CPU made of transistors and conductors of heat and sound sensor

What does GPIO stand for?

1. General Purpose Inner Outer Propeller
2. General Purpose Interested Old People
3. General Purpose Input Output Pins
4. General Purpose Input Output Processor C.General Purpose Input Output Pins

Before your program "code" can be sent to the board, it needs to be converted into instructions that the board understands. This process is called...

1. Stop
2. Create Sketch C.Compile

D.Serial Monitor C.Compile

This shows you what the IDE is currently doing and is also where error messages display if you make a mistake in typing your program. (often called a syntax error)

1. Sketch Editor
2. Text Console C.Line Number

D.Serial Monitor B.Text Console

This shows you what line number your cursor is on. It is useful since the compiler gives error messages with a line number.

1. Sketch Editor
2. Text Console C.Line Number

D.Serial Monitor C.Line Number

A function is a series of programming statements that can be called by name. Which command is called once when the program starts:

A.loop() B.(output) C.setup()

D.(input) C.setup()

A function is a series of programming statements that can be called by name. Which command is called repetitively over and over again as long as the Arduino has power.

A.loop() B.(output) C.setup()

D.(input) A.loop()

A function is a series of programming statements that can be called by name. Which command delays the LED by a number of milliseconds is.

1. loop()
2. delay()
3. setup()
4. stop() B.delay()

What is this line of code: // the loop function runs over and over again forever

A.A statement

B.A single line comment

C.A function definition

D.A bowl of cereal B.A single line comment

What is this line of code: void loop() {

A.A statement

B.A single line comment C.Part of a function definition

D.A banana C.Part of a function definition

Which pin has a built-in LED? A.Pin 13

B.Pin 10

C.Pin 8

D.Pin 7 A.Pin 13

What are two two main types of Arduino pins? A.Digital and analog.

B.Digital and modulation.

C.Pulse and analog. A.Digital and analog.

If you make a voltage divider circuit with R1 = 10K and R2 = 10K, and your Vin is 12V, what will be your Vout?

A.12V B.10V C.6V

D.5V C.6V

How many bits are there in a byte? A.256

B.8 C.16

D.10 B.8

On a breadboard, where do you put a DIP package? A.In the middle of the board

B.On the bottom side of the board

C.In the power rails

D.With the potato chips A.In the middle of the board

What is the nominal voltage of 6 AAA batteries connected in parallel? A.6V

B.9V C.12V

D.1.5V D.1.5V

This is an unsigned data type that occupies 1 byte of memory. Same as the byte datatype. It encodes numbers from 0 to 255.

A.highByte() B.unsigned char

C.unsigned long

D.volatile B.unsigned char

This is used to include outside libraries in your sketch. This gives the programmer access to a large group of standard C libraries (groups of pre-made functions), and also libraries written especially for Arduino.

A.#include B.break C.void

D.#define A.#include

This clears (writes a 0 to) a bit of a numeric variable.

A.bitClear B.sizeof() C.pinMode

D.#include A.bitClear

The void keyword is used only in function declarations. It indicates that the function is expected to return no information to the function from which it was called.

A.HIGH

B.void C.pin

D.LOW B.void

Sensors play a big part in the Internet of Things, collecting data from the physical world. There is a long and growing list of sensor types, but some of the more common ones are found in smart phones. Which sensor in your phone collects information on your physical activity for health apps?

A.Gyroscope B.Magnetometer C.Proximity sensor

D.Accelerometer D.Accelerometer

In an industrial fan maintenance system, what physical change does Ian Howard say a sensor might detect, measure and transmit data on?

A.Vibration B.Blade speed C.Power

D.Wind direction A.Vibration

When the gate system at the dairy closes one gate and opens another to direct a cow into a particular area, what is (or what are) the actuators in play?

A.RF antennae detecting ID of cow B.Light sensors detecting cow in gate C.Pneumatic arms on gate mechanism

D.Movement sensor in cow's pendant C.Pneumatic arms on gate mechanism

All of the parts of a complete IoT process need programming. But where in the following IoT process is programming needed for the system to be Internet of Things?

1. Soil sensor to microcontroller to the Cloud to microcontroller to fertilising mechanism
2. Soil sensor and Cloud and fertilising mechanism C.Microcontroller and Cloud

D.Soil sensor and Microcontroller

E.Soil sensor and fertilising mechanism C.Microcontroller and Cloud

Which of these sentences could be a line of programming code?

1. If temperature is more than 30 degrees C, run fan, else, run heater
2. When it gets too hot, turn the fan on otherwise keep heating the room
3. Run heater until temperature reaches 30 degrees C then cool it down A.If temperature is more than 30 degrees C, run fan, else, run heater

In the reticulation (water irrigation) system, what type of device is the outdoor camera? A.Sensor

B.Actuator C.Control

D.none of the above A.Sensor

What sort of actuator would you use to control the movement of a conveyor belt?

A.A linear actuator B.An AC motor

C.A thermocouple

D.A water pump

E.A rubber belt B.An AC motor

Which of the following IS NOT criteria to help select a wired communication protocol? A.Speed

1. Number of wires per connection
2. Ability to transmit and receive information at the same time
3. Number of devices that need connecting E.Distance to the nearest power point

F.Maximum distance between master and slaves E.Distance to the nearest power point(\*)

F.Maximum distance between master and slaves

If we intend to include a servo motor as an actuator, what feature should we include when selecting a microcontroller?

A.Analogue to Digital converter B.Digital to Analogue converter C.GPIO pins

D.Pulse Width Modulation pin

E.I2C pins C.GPIO pins D.Pulse Width Modulation pin(\*)

In an IoT smart home system, sensors are connected to the home power outlet and are required to process some part of the collected data. What would be the best option to connect sensors to each other, as well as a central location for Internet connection, where high data rate is required?

1. Bluetooth
2. 6LowPAN

C.WiFi

D.LoRa C.WiFi

From the list below, which is the LPWAN technology? A.LoRa

B.WiFi C.LTE

D.6LowPAN A.LoRa

Fill in the blank: System can be a major problem, especially in badly designed closed-loop systems, as they may try to over-correct any errors which could cause the system to lose control and oscillate.

A.stability B.scalability C.security D.useability

E.feedback A.stability

One advantage of a closed loop feedback system is:

A.Simplicity of design

1. Ability to react to disturbances in the system
2. It is less stable than an open loop system
3. Depends on calibration for accuracy
4. All of the above B.Ability to react to disturbances in the system

Fill in the blank. If we want to measure the temperature of a solution in a chemical process to within 0.1 degree Celsius, over a range of 100 degrees, our development board would need a

converter to meet that requirement for accuracy.

A.8 bit

B.10 bit

C.16 bit

D.32 bit B.10 bit

provide the means to create capability that reflects true awareness of the physical world and people.

A.Sensors B.Heterogeneity C.Security

D.Connectivity A.Sensors

in IoT as one of the key characteristics, devices have different hardware platforms and networks.

A.Sensors B.Heterogeneity

C.Security

D.Connectivity B.Heterogeneity

IoT devices are naturally vulnerable to threats. A.Sensors

B.Heterogeneity C.Security

D.Connectivity C.Security

What is the popular method of organizing wireless network topologies? A.Software

B.Synchronization C.Network

D.Cluster D.Cluster

What is the role of communication protocol in IoT? A.Smart cities

1. Cyber physical system
2. Mac layer issue
3. Managing energy C.Mac layer issue

Which of the following is the future application of IoT? A.Role of green IoT system

1. QoS in communication
2. Secure communication
3. Multimedia communication A.Role of green IoT system

The object of IoT will be empowered by A.Network

B.Cloud C.Devices

D.Connectivity C.Devices

layer is the communication layer that connects the IoT devices with WAN. A.Internet layer

B.Application layer C.Sensor layer

D.Network layer D.Network layer

either built into smoke alarm and thermostat or in the form of small plug - in. A.Microphones

B.Loudspeaker

C.Microphone and loudspeaker

D.Mic A.Microphones

Will reduces the cost of the devices. A.Intuitive

1. Voice telephony
2. Voice recognition
3. Voice Integration D.Voice Integration

How many analog pins on an Arduino Uno board? A.5

B.6

C.7

* 1. B.6

Which of the following function is used to set any pin in the state of HIGH/LOW ? A.digitalRead

B.digitalWrite C.analogWrite

D.pinMode B.digitalWrite

What does PWM stand for? A.Pulse Width Modulation

B.Pulse Wide Module C.Preventive Width Modulation

D.None of the other A.Pulse Width Modulation

Which function in the Arduino IDE is used to set any pin in output or input state? A.digitalWrite

B.delay C.pinMode

D.analogRead C.pinMode

How many PWM pins are present in the Arduino UNO? A.1

B.3

C.6

* 1. C.6

What among the following is an example of external interrupt for the Arduino? A.Button

B.Resistor C.LED

D.Capacitor A.Button

What will be the correct syntax to make a digital pin (say D2) as an output pin? A.pinMode(2,output)

B.pinMode(2,Output) C.pinMode(2,OUTPUT)

D.pinmode(2,OUTPUT) C.pinMode(2,OUTPUT)

Which of the following digital pins can be used in Arduino Nano/Uno to give interrupt? A.D2

B.D6 C.D4,D5

D.D2,D3 D.D2,D3

What is the size of EEPROM of the Arduino UNO?

A.1 KB

B.2 KB

C.4 KB

D.8 KB A.1 KB

Which function in the Arduino is used to start the serial communication using the COM port? A.Serial.available()

B.Serial.begin() C.serial.begin()

D.setup() B.Serial.begin()

The action that will be performed using this switch case will be:switch (2): {case 1: digitalWrite(11,HIGH); case 2: analogRead(A3)}

A.D11 will become HIGH B.Analog value of A3 will be read C.D11 will become LOW

D.None of the other B.Analog value of A3 will be read

While taking the input from the user in Arduino, which of these function is used in Sketch? A.Serial.print

B.Serial.println C.Serial.available

D.None of the other C.Serial.available

What is the Tinkercad Circuits?

A.Its a just s software to create games

B.Tinkercad is a free online collection of software tools that help people create and simulation circuits.

C.Its a software for playing and create games.

D.None of the other B.Tinkercad is a free online collection of software tools that help people create and simulation circuits.

How do you zoom in on Tinkercad? A.Spacebar

B.Use the arrows on the keyboard

C.Use the scroll wheel

D.Right Click C.Use the scroll wheel

A photoresistor is an electronic component whose electrical resistance when it is exposed to light.

A.changes B.increases

C.doesn't change A.changes

What does this syntax mean? myservo.attach(9) A.Connect the control wire 9 to GND pin

1. Connect the control wire for 9 seconds
2. Connect the control wire to 9 volts
3. Connect the control wire to digital pin 9 D.Connect the control wire to digital pin 9

In remote control terms, IR stands for what? A.indirect radio

B.infrared C.inside remote

D.instant reception B.infrared

Infrared remote controls use what to carry signals between the remote control and the device it controls?

A.radio waves B.sound

C.light C.light

Infrared signals can be used for . A.(a) long-range communication

B.(b) short-range communication C.Both (a) and (b)

D.None of the other B.(b) short-range communication

Which sensor is LM35?

1. Pressure sensor
2. Humidity sensor C.Temperature sensor

D.Touch sensor C.Temperature sensor

LM35 provides Volt for each degree count? A.1

B.0.01 C.0.001

D.10 B.0.01

What is the main purpose of the SRF05 sensor? A.Water level sensor

1. Sound intensity sensor
2. Ranging sensor
3. Temperature sensor C.Ranging sensor

What is the purpose of the pin named ECHO of HC-SR04 sensor? A.Allows the ultrasonic sound wave to be sent from the sensor.

1. Provides the information that the ultrasonic sound wave is returned.
2. Allows the sensor to be fed with energy.
3. Provides the chassis connection of the sensor. B.Provides the information that the ultrasonic sound wave is returned.

What does the AREF pin on the Arduino UNO? A.Used to trigger a interrupt.

B.Reference voltage for analog inputs. C.To reset the microcontroller.

D.Provides 8-bit PWM signal. B.Reference voltage for analog inputs.

What pins can the Arduino UNO board communicate with the computer?

A.PWM pins B.ADC pins C.I2C pins

D.UART pins D.UART pins

What case is called serialEvent() interrupt? A.Serial port shuts down.

1. When data is sent from the serial port.
2. When data comes from the serial port.
3. When the voltage is applied to the Arduino. C.When data comes from the serial port.

Each computer has its own Internet search engine.

1. True B.False
2. False

What does CRM stand for?

1. Customer Research Management
2. Customer Relationship Management C.Customized Research Management D.Customer Research Metrics

B.Customer Relationship Management

How has e-commerce revolutionized business?

1. It has allowed businesses to utilize new avenues of advertising, selling, and distribution.
2. It attempts to level the playing field.
3. It transcends geographic boundaries.
4. All of the above D.All of the above

A allows customers to continue browsing after selecting each item they wish to purchase A.Shopping Cart

B.Forms-based interface C.SSL connection

D.Virtual memory A.Shopping Cart

Which of the following is NOT a standard used in E-Commerce? A.EDI

B.XML

C.SETI

D.X12 C.SETI

Which of the following is NOT the characteristics of consumer when studying about EC Consumer Behavior Model?

A.Age B.Gender C.E-mail

D.Education C.E-mail

Mechanism to protect private networks from outside attack is A.Firewall

B.Antivirus C.Digital signature

D.Formatting A.Firewall

While making payment using electronic check, credit and debit cards, the server authenticates the customers and verifies with the bank that funds are adequate before purchase

1. True
2. False A.True

A computer communication technology that provides a way to interconnect multiple computer across short distance is

A.LAN B.WAN C.MAN

D.Wireless network A.LAN

DNS is

1. The distributed hierarchical naming system
2. The vertical naming system
3. The horizontal naming system
4. The client server system C.The horizontal naming system

Which of the following is a technology constraint from the e-commerce macro-environment? A.Propensity for consumers to purchase online.

B.Opt-in to e-mail required to avoid SPAM C.Likelihood of fraudulent transactions

D.Taxation at source of purchase C.Likelihood of fraudulent transactions

In E-Commerce, HTTPS is a communication protocol that uses A.Public key encryption

1. Secret key encryption
2. Private key encryption
3. Data key encryption A.Public key encryption

The concept of electronic cash is to execute payment by A.Credit Card

B.ATM Card

C.Using computers over network

D.Cheque C.Using computers over network

A chemical manufacturer has transactions that are predominantly: A.business to consumer.

1. consumer to consumer.
2. consumer to business
3. business to business C.consumer to business.

A B2B reverse auction is:

1. the same as a seller auction.
2. intended to reduce the price by increasing competition from suppliers.
3. always run through a B2B marketplace.
4. both the second and third answers above. B.intended to reduce the price by increasing competition from suppliers.

A computer system that permits multiple users to run programs at same time A.Real time system

B.Multi programming system C.Time sharing system

D.Multi tasking system D.Multi tasking system

The mercantile process model consists of the following phase(s): A.The pre-purchase phase

B.Purchase consummation phase C.Post-purchase Interaction phase

D.All of the above D.All of the above

The most serious disadvantage of e-auctions is:

1. the risk of fraud.
2. Logistics.
3. unreliable auction software.
4. payment delays. A.the risk of fraud.

Many companies use intermediaries or trading assistants instead of implementing e-auctions themselves for each of the following reasons EXCEPT:

1. The company name is not widely recognized.
2. To bring many more buyers to the auction.
3. To avoid tax and legal fees.
4. Costs of auction intermediaries or assistants are less than the costs of physical auctions.

C.To avoid tax and legal fees.

All of the following are potential benefits from auctions to sellers EXCEPT: A.auctions can broaden the customer base and reduce cycle time.

1. sellers receive valuable price sensitivity information.
2. sellers are always anonymous.
3. sellers can liquidate large quantities of obsolete items very quickly. C.sellers are always anonymous.

Select the correct answer from the choices below which is corresponding with the following statement in STRATEGIC PLANNING TOOLS" : It is a methodology that surveys external opportunities and threats and relates them to internal strengths and weaknesses.

A.SWOT analysis B.strategy map

C.balanced scorecard

D.BCG matrix A.SWOT analysis

A major shortcoming with authentication services is:

1. two different authenticators may come up with different opinions regarding the authenticity and description of a given item.
2. it is impossible to tell whether many items are reproductions or genuine. C.dishonest authenticators are the primary sources of fraud on the Internet.

D.most auction sites forbid the use of authentication services. A.two different authenticators may come up with different opinions regarding the authenticity and description of a given item.

work best with many buyers and many sellers. A.Bartering

1. Dynamic exchanges
2. Forward auctions
3. Reverse auctions A.Bartering

The services provided through location-based m-commerce focus on key factors which include all of the following EXCEPT:

A.Geocaching, or determining the topography of an area. B.Navigation, or plotting a route from one location to another. C.Tracking, or monitoring the movement of a person or thing.

D.Timing, or determining the precise time at a specific location A.Geocaching, or determining the topography of an area.

Infrastructures that "support" the wireless connection are:

A.network access points, mobile communications server switches, and cellular transmitters and receivers.

B.WAP gateways, GPS locators, and GPS satellites. C.PDAs, smartphones, and portable computers.

D.web servers, mobile devices, and microbrowsers. A.network access points, mobile communications server switches, and cellular transmitters and receivers.

A is suitable for mobile users who need to make very short-range device-to-device wireless connections within a small space, such as a single room, and most commonly with Bluetooth.

1. personal area network
2. local area network
3. wireless area network
4. metropilitan area network A.personal area network

You are walking near a coffee shop and suddenly your cell phone beeps with a message: "Come inside and get a free biscotti with any purchase." This is an example of:

A.permission marketing B.location-based advertising

C.customer relationship management

D.m-commerce C.customer relationship management

One way to share information with supply chain partners is wireless , which is the science of measuring physical phenomena such as temperature, volume, or an on/off condition at a remote point and transmitting the value to a distant recorder or observer

A.RFID

B.mobilization C.osmosis

D.telemetry D.telemetry

WiMax and 3G wireless mobile technologies offer telemedicine application opportunities that include all of the following EXCEPT:

1. Reduced threat of malpractice suits because there is no hands-on interaction between the remote physician and the patient.
2. Prescriptions can be transferred electronically to the appropriate pharmacy for a no-wait pick- up by the patient.
3. Real-time consultation between a patient in one location and a medical specialist in another. D.Wearable heart monitors linked to a cell phone can automatically contact doctors or family members at the first sign of health problems. A.Reduced threat of malpractice suits because there is no hands-on interaction between the remote physician and the patient.

All of the following about RFID are true EXCEPT:

1. An RFID tag can hold 20 times the amount of information a bar code can hold, and the tag can be read through cardboard, wood, and plastic at a range of up to 100 feet
2. An RFID tag includes an antenna and a chip with information about the item
3. An RFID reader contains a radio transmitter and receiver
4. An RFID tag remains inactive until radio frequency energy from the tag's radio transmitter hits its antenna, giving the chip enough power to emit a 96-bit string of information

A.An RFID tag can hold 20 times the amount of information a bar code can hold, and the tag can be read through cardboard, wood, and plastic at a range of up to 100 feet

Digital Signature is

1. Scanned Signature on Computer
2. Code number of the sender
3. Public Key Encryption
4. Software to recognize signature D.Software to recognize signature

The method(s) of payment for online consumers are A.Electronic cash

B.Credit/debit C.Electronic checks

D.All of the above D.All of the above

Which of the following statements are INCORRECT about company-centric marketplaces? A.They are marketplaces which focus on a single company's purchasing needs or selling needs.

1. They are generally public entities owned by that company.
2. They support for buying needs (many to one, or buy-side).
3. They support for selling needs (one to many, or sell-side). B.They are generally public entities owned by that company.

As in e-commerce, m-commerce B2C applications are concentrated in each of the following areas EXCEPT:

A.retail shopping for products and services B.telecommunications

C.targeted advertising

D.providing content for a fee through mobile portals B.telecommunications

All of the following about wireless wide area networks (WWAN) are true EXCEPT:

1. The single WWAN network standard insures compatibility of handsets within and between countries.
2. Most WWANs are cellular phone networks.
3. At the center of each cell is a base station transceiver or cell tower that is used to send and receive signals to and from mobile devices operating within the cell.
4. When a device is turned on, a SIM card inside the device identifies itself to the WWAN.

A.The single WWAN network standard insures compatibility of handsets within and between countries.

Which of the following is an example of edutainment? A.Two or more students sharing music over the Internet

B.An online science fiction game whose object is to blast as many aliens as possible in a 60 second round

C.A community college providing an online college course on digital media

D.An online game that uses colorful characters to teach young children about numbers

D.An online game that uses colorful characters to teach young children about numbers

Which of the following statements about blogs is not true?

A.A blog is a personal Web site, open to the public, in which the owner expresses his or her feelings or opinions.

1. Blogs became very popular after the September 11, 2001 terrorist attacks when people were looking for as many sources of information as possible and for personal connections to the tragedy.
2. Blogs are limited to one-way communication.
3. The most common types of blogs are professional blogs. C.Blogs are limited to one-way communication.

P2P systems have all of the following key characteristics EXCEPT:

1. They provide for real-time access to other users through techniques such as instant messaging and multichannel collaboration applications.
2. The users' computers can act as both clients and servers.
3. The overall system is well integrated, but lacks tools for easy creation of content or for adding functionalities.
4. They support cross-networking protocols such as SOAP or XML-RPC, which enables a program on one computer to execute a program on a server computer. C.The overall system is well integrated, but lacks tools for easy creation of content or for adding functionalities.

More and more people are willing to pay for digital music, as shown by the success of

.

A.Napster B.Kazaa C.Apple's iTunes

D.P2P C.Apple's iTunes

All of the following are examples of e-government EXCEPT:

A.a company sells army and navy surplus supplies at auction over the Internet.

B.a contractor submits an application for a building permit using a city hall Web site.

C.an unemployed worker consults a Web site operated by the state employment department to learn about job openings in his city.

D.a state purchasing officer places an online order for office supplies from an e-catalog sent to her by a national office supply store. A.a company sells army and navy surplus supplies at auction over the Internet.

A(n) is a computer system capable of integrating, storing, editing, analyzing, sharing, and displaying spatial information.

A.geographical information system B.global positioning system

C.l-commerce system

D.on-star system A.geographical information system

P2P systems have all of the following key characteristics EXCEPT:

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3. The overall system is well integrated, but lacks tools for easy creation of content or for adding functionalities
4. They support cross-networking protocols such as SOAP or XML-RPC, which enables a program on one computer to execute a program on a server computer A.They provide for real-time access to other users through techniques such as instant messaging and multichannel collaboration applications

The tasks of KM include each of the following EXCEPT:

A.creating knowledge repositories where knowledge can be stored and retrieved easily B.enhancing a knowledge environment in order to conduct more effective knowledge creation, transfer, and use

C.restricting knowledge access to prevent its transfer between individuals

D.managing knowledge as an asset so as to increase the effective use of knowledge assets over time C.restricting knowledge access to prevent its transfer between individuals

involves using various computer-based tools and techniques to analyze transaction data and generate new ideas

A.Knowledge creation B.Knowledge capture C.Knowledge classification

D.Knowledge management A.Knowledge creation

Most universities use e-learning:

1. exclusively in reaching students who couldn't otherwise attend classes.
2. only when forced by administrators to use it as a way to recruit distant students or reduce costs.
3. as a total replacement for traditional classrooms.
4. as a supplementary channel to traditional classrooms. D.as a supplementary channel to traditional classrooms.

One initiative underway that could lead to widespread support for the introduction of RFID is the

, which identifies the manufacturer, producer, version, and serial number of each item and does not require line-of-sight contact to be read.

A.Electronic Product Code B.Universal Product Code C.Smart Product Network

D.Sensor Network A.Electronic Product Code

Wal-Mart and Levi Strauss collaborate on demand forecasting in order to optimize the flow of materials along the supply chain. This is an example of:

A.reducing design cycle time

B.APS (Advanced Planning and Scheduling)

C.CPFR (Collaborative Planning, Forecasting and Replenishment)

D.reducing product development time C.CPFR (Collaborative Planning, Forecasting and Replenishment)

A major block in the widespread implementation of collaborative commerce is:

1. the theory of collaborative commerce hasn't been proven effective in real-world applications.
2. the technology needed isn't available. C.collaborative commerce is extremely expensive.

D.the lack of universally accepted standards. D.the lack of universally accepted standards.

Which of the following is an example of a closed loop system?

1. Dishwashing machine
2. Air-conditioning unit
3. Bread toaster
4. Electric hand drier
5. Automatic door opener B. Air-conditioning unit

IoT gateway is:

1. Physical device
2. Software program
3. Raspberry Pi
4. All of the above D

(True or False)

Gateways can be configured to perform pre-processing of the collected data from thousands of sensors locally before transmitting it to the next stage.

1. True
2. False A

IoT gateways perform several critical functions such as: (Which one is wrong).

1. Device connectivity
2. Protocol translation
3. Improving networks
4. Data filtering and processing, security C

An IoT gateway device bridges the communication gap between: (Which one is wrong).

1. end users
2. IoT devices
3. Sensors
4. cloud A

Before purchasing one gateway device you should consider: (Which one is wrong).

1. Network Security
2. Uptime
3. Power
4. Downtime B

Which one isn't key core principles of security for IoT gateway.

1. Strategy
2. Confidentiality
3. integrity
4. authentication A

Which device is often to be attacked in IoT system.

A. Sensor B.Actuator

C. Gateway

D. Cloud Server C

The maximum number of IPv4 address is: A. 2^32

B. 2^64

C. 2^128

D. 2^256 A

The maximum number of IPv6 address is: A. 2^32

B. 2^64

C. 2^128

D. 2^256 C

How many byte an IPv4 address has:

1. 32
2. 4
3. 16
4. 64 B

Which of the following IPv4 address is in correct format. A. 172.16.400.3

B 172.a4.400.3

C. 172.16.286.3

D. None of the above D

The benefits of IPv6 are (which one is wrong).

1. more private address collisions
2. Auto-configuration
3. Flexible options and extensions
4. No more NAT (Network Address Translation) A

Which of the following IP address is wrong?

A. 43.126.38.91

B. 126.133.254.1

C. 22.131.256.3

D. 222.222.222.222 C

The protocol for Internet is:

1. TCP/IP
2. ZigBee
3. Wi-Fa
4. Bluetooth A

An automatic telephone switch has:

1. Memory
2. Service logic
3. Controller
4. All of the above D

Are VPNs legal?

1. Yes in all countries
2. Not at all
3. Yes In some countries
4. Needs permission In the USA C

What you should considered more when you are buying VPN:

1. Speed, privacy and security
2. Cost
3. Security
4. Free trials and money back guarantees, A

It is safe to use public Wi-Fi hotspots if you are connected to

1. Internet server
2. ISP
3. VPN provider
4. All of the above A

Which one is wrong for cloud and IoT cloud?

1. The cloud is just a metaphor for the Internet
2. The cloud is a Secure Internet provider
3. Cloud integrates billions of devices, sensors, gateways, protocols and data storage
4. IoT cloud is a sophisticated high performance network of servers B

Which one is wrong for cloud and IoT cloud?

1. IoT cloud covers all things, objects, people and animals
2. Internet clouds covers all computers, mobiles, other peripherals and people
3. All countries must use one IoT Network
4. No difference between IT cloud and IoT cloud
5. Cloud computing and Internet of Things (IoT) are two very different technologies. D

What are not the major components of Internet of Things?

1. Cloud
2. ISP
3. User Interface
4. Analytics B

IoT Networks must be standard, because:

1. Different devices are manufactured by different companies!
2. Of security
3. All countries must use one IoT Network
4. None of the above A

Which one is NOT an example of user interface?

1. Smartphone
2. www - web pages
3. Gateway
4. Your PC C

For sending signals via radio stations channels, you should either:

1. Increase Power Energy of radio station or Decrease Bandwidth!
2. Increase Power Energy of radio station and Increase Bandwidth!
3. Decrease Power Energy of radio station and Decrease Bandwidth!
4. Decrease Power Energy of radio station or Increase Bandwidth! A

Morse communication sends characters less than:

1. 4K bit/second
2. 100 bit/second
3. 20 bit/second
4. 1K bit/second C

Which one is wrong about Bandwidth and Range?

1. NFC has Low BW and Low Range
2. Bluetooth has Low BW and Low Range
3. Lora has Low BW and Low Range
4. Mobile 4G/LTE has Low BW and Low Range D

The four important layers in IoT Ecosystems are:

1. sensor layer
2. network layer
3. platform layer
4. application layer
5. all of the above E

What are the major components of the Internet of Things:

1. Things/devices
2. gateway
3. cloud
4. analytics
5. user interface
6. all of the above F

What is the difference b/w Normal Device and IoT Devices?

1. Connected devices is about connecting and communicating b/w devices
2. However, IoT goes beyond to include people, things, and software systems
3. A and B C

Types of networks include:

1. PAN
2. LAN
3. MAN
4. WAN
5. all of the above E

Some examples of wireless technology are:

1. Cordless phone
2. GPS units
3. Wireless computer parts/satellite tv
4. Zigbee, cellular, wireless networking, LoRa, LiFi,Wifi, BT E all of the above E

NFC allows a short range of less than:

1. 20 cm
2. More than 20 cm
3. less than 20 mm
4. more than 20 mm A

Only veryy few cell phones support NFS as it has:

1. Low transmission capacity
2. High transmission capacity
3. Medium transmission capacity
4. Non transmission capacityy A

The wireless communication tech not belong in the home area network is:

1. RFID
2. NFC
3. Wi-Fi
4. LoRa D

In IoT networking, we need the WAN because:

1. We want to communicate with IoT devices everywhere.
2. We want to communicate with ppl everywhere
3. We want to communicate with high performance apps
4. we want to communicate with high security A

Radio stations, for sending signals far from stations using:

1. High power Energy (Kilowatt)
2. High Power Energy (Megawatt)
3. High Frequency (Kilo Hertz)
4. High Frequency (Mega Hertz) A

IoT Network's need:

1. To use low power energy
2. To use high power energy
3. to send signals not far from transmitter
4. a and b are correct D

In IoT networks we are looking for:

1. sending signals far, using low power energy
2. sending signals near using low power energy
3. sending signals far, using high power energy
4. sending signals near, using high power energy A

The correct definition for bandwidth is:

1. capacity of channel
2. the range of frequencies within a given band, in particular that used for transmitting a signal
3. Rate at which electronic signals can travel thru a medium such as wire, cable, or channel.
4. all the above D

For sending signals via radio stations channels, you should either:

1. increase power energy of radio station or decrease bandwidth
2. decrease power energy of radio station or decrease bandwidth
3. increase power energy of radio station or increase bandwidth
4. decrease power energy of radio station or increase bandwidth A

Bandwidth may be thought of as the width of the 'pipe' through which data travels:

1. Greater the width, larger the amount of data can flow through it.
2. Smaller the width, larger the amount of data can flow through it.
3. Greater the width, smaller the amount of data can flow through it.
4. smaller the width, larger the amount of data can flow through it. A

Morse communications sends characters less than:

1. 4k bit/second
2. 100 bit/second
3. 20 bit/second
4. 1k bit /second C

About the bandwidth and range of NFC, which one is correct?

1. low BW and low range
2. high BW and low range
3. low BW and high range
4. high BW and high range A

Bluetooth is used:

1. for small devices low BW and small battery
2. for small devices high BW and small battery
3. for small devices low BW and big battery
4. for large devices low BW and small battery A

Which one is correct for LoRa technology?:

1. Low BW but long range (no limit by physics, limited by human)
2. High BW but long range (no limit by physics, limited by human)
3. Low BW but long range (no limit by physics and by human)
4. High BW but long range (no limit by physics and by human) A

Which of the following technology is closer to the standard of mobile technology?

1. LoRa
2. NSF
3. RFID
4. Bluetooth A

Which one related to bandwidth and range, is wrong?

1. NFC has low BW and low range
2. Bluetooth has lowBW and low range
3. LoRa has low BW and low range
4. Mobile 4G/LTE has low BW and Low Range D

Most modern smart devices and sensors can be connected to low power wireless networks like WiFi, ZigBee, Bluetooth, Z-wave, LoRaWan and each of these wireless technologies has its own pros and cons in terms of:

1. Power
2. Data transfer rate
3. Overall efficiency
4. All of the above D

In the area of IoT developments, researchers are looking for:

1. Low power, low cost wireless transmitting devices
2. Long battery life
3. Efficiency of battery
4. All of the above D

In order to achieve intelligent D2D communication, devices require:

1. intelligent routing protocols
2. intelligent routing internet
3. intelligent routing gateway
4. intelligent routing routers A

ZigBee is an IEEE 802.15.4-based spec for a squire of high level comm protocols used to create PANs w/ small, low-power digital radios, such as home automation, medical device data collection, and other low-power low-bandwidth needs, designed for small scale projects which need wireless connection

1. True
2. False A

ZigBee is:

1. A low power
2. Low data rate
3. Close proximity
4. All of the above D

Protocol IEEE 802.11 is:

1. a set of media access controls(MACs)
2. a set of physical layers
3. Specifications for implementing WLAN computer communication in the 900 MHz and 2.4,3.6, 5, and 60 GHz frequency bands.
4. The standard and amendments provide the basis for wireless network products using WiFi brand
5. all of the above E

Wi-Fa is a technology for wireless local area networking with devices based on:

1. IEEE 802.11 standards
2. Wi-Fi using radio waves
3. Wi-Fa providing wireless high speed intternet
4. Wi-Fi providing network connections
5. all of the above E

Which one is correct in terms of Wi-Fi:

1. Wireless Fidelity
2. Wi-Fi is simple a trademarked phrase that means: IEEE 802.11x
3. Wi-Fi is wired technology
4. Wi-Fi is useful for WAN network B

What is used to provide IoT sensors access to the network? A microcontroller

What limits the type of different objects that can become intelligent sensors on the internet of things Doorbells, garage doors, smartwwtvhes

What devices provides auto discovery services for smart devices that are connected to the network The home gateway

What are two requirements to connect a smart device to a home wireless network An IP

address and an SSID

What are two things that all digital devices need in order to work? Data & programing

What is the purpose of packet tracer? To simulate and visualize one or more networks

What is the largest network in existence? The internet

What type of network is the connection between a Bluetooth headset and a vehicle? - - - - -

PAN

Which type of network consists of wired computers in a college classroom? LAN

What is an open source physical computing platform that can take input from a variety of switches or sensors to control physical objects? Arduino

Which technology is used as a visual programming tool to create a program by connecting colored blocks Blocky

Which two skills help with IoT prototyping? Programing, design

Which describes global variables in programming languages? Anywhere in a program it

can be used

What are two characteristics of the Python programming language? Easy to read code &

it runs without conversion to machine learning

Change will have to occur in the corporate network in order to prepare for the Internet of things. Which type of testing would a company do to demonstrate the benefits of networking a new "thing" that was not on the network before Prototyping

What are three attributes of data that would indicate that it may be big data Variety,

volume, velocity

What are three benefits of cloud computing It eliminates or reduces the need for onsite

maintenance and management

What is the purpose of data analytics To gain insights from data

How was data that has been collected through sources such as webpages, audio, or tweets categorized? Unstructured

True or false? Comma-separated values (CSV), JSON and XML are all tools that can be used to manipulate structured data True

Mined data can be visualized through the use of charts. What are the criteria that can be used to determine the best chart selection. Number of variables shown

Items requiring comparison.

What are two features of automation? A process that is self driven & process that might

eliminate human intervention

Which technology has the intelligence that is demonstrated by machine in a way that mimics human cognitive functions? AL

Which technology is a subset of AL that uses statistical technique to enable computers to "learn" from collected data ML (machine learning)

What is a key feature of the assurance element of the intent-based networking model? - - - - -

End to end Verification of network

Which security best practices involves defining company rules, job duties and expectations - - -

* - Developing a security policy

What are two areas of physical security which Outside perimeter security & inside

perimeter security

A company requires using a secure encrypted Internet connection when connecting to the corporate network from outside the company. Which technology should be used when employees travel and use a laptop VPN

Which character is used within a search engine to gather data efficiency by placing the character before and after the name of the particular person Quotation marks

Which two type of institutions do malicious web pages often look like Bank website &

financial institution

What are some examples of data types that would be classified as personally identifiable information (PII) Social security number, email address, bank account number,

fingerprint

True or false? With artificial intelligence, smart devices can modify processes and settings on the fly in responses to changes on the network True

What is the core components of intent-based networking? Artificial intelligence

FOR Repeat the execution of a specific block of code for a specific number of times

While Execute A block of code while condition is true

IF THEN Allow the code to make decisions

fog computing An architecture that utilizes edge devices for data pre-processing and

storage

Cloud services A collection of data centers or connected servers that provide anywhere

anytime access to data and applications

Distributed processing Breaks large volumes of data into smaller pieces which are

processed by computers in different locations

Hadoop A comprehensive ecosystem of open source software for big data management

In an industrial fan maintenance system, what physical change does Ian Howard say a sensor might detect, measure and transmit data on?

1. Vibration
2. Blade speed
3. Power
4. Wind direction A. Vibration

Which word or phrase most accurately sums up the main benefit of IoT technology?

1. Economies
2. Enhanced safety
3. Accuracy
4. Efficiencies
5. Energy use
6. Response time D

What protocol is good for communication of IoT devices with restricted power and low data rates over a range of a few kilometres ?

Which of these media is currently NOT used in communicating data? Wireless / electromagnetic waves

Hydrogen cables / electro ionisation Fibre optics / pulses of light

Copper cables / electrical signals

1. Bluetooth
2. Zigbee
3. LoRaWAN
4. 4G
5. WiFi C

Communication in a network is carried via a ?

1. Sensor
2. Router
3. Medium
4. Device
5. Controller C

How does the addition of data due to IoT create privacy issues?

1. Systems struggle to deal with the large amount of data so data gets 'stuck outside security' waiting to be dealt with
2. Multiple data sets each stripped of identification initially can be combined as a whole and reveal identity
3. More data going through security measures inevitably means more security breakdowns and data leakage
4. IoT devices generally connect wirelessly creating additional harder to secure channels for data hijack B

How does fog computing reduce security risks?

1. It acts on IoT data closer to the source
2. It creates unclear connections that are difficult to intercept
3. It reduces the need for remote management
4. It scrambles electronic signals and encrypts all data A

A vacuum cleaner has a maximum power consumption of 1000 W and is powered by 240 Volts. What is the current used?

1. 24 amps
2. 4.17 amps
3. 0.24 amps B

If you need to increase the current through a resistor in a circuit, what would you do?

1. Decrease the voltage applied to the resistor.
2. Increase the voltage applied to the resistor.
3. Increase the room temperature.
4. Increase the value of the resistor.
5. All of the above. B

What type of device is the door alarm? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above A

What type of device is the moisture detector? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above A

What type of device is the CPU? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above C

What type of devices are the power supplies? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above D

Sometimes many devices share the same set of wires. This connection mode is referred to as a

? (sơ đồ)

1. Train
2. Bus
3. Multi-point connection B

What sort of actuator would you use to control the movement of a conveyor belt?

1. A linear actuator
2. An AC motor
3. A thermocouple
4. A water pump
5. A rubber belt B

If we intend to include a servo motor as an actuator, what feature should we include when selecting a microcontroller?

1. Analogue to Digital converter
2. Digital to Analogue converter
3. GPIO pins
4. Pulse Width Modulation pin
5. I2C pins D

Which of the following disruptions - caused by vehicles becoming fully autonomous - were the people surveyed most worried about?

1. Reduced private ownership of cars.
2. Less traffic lights on roads.
3. Reduced number of driving jobs.
4. Less space needed for parking.
5. Reduced vehicle emissions. A

Which of the following is one of the ways IoT monitoring of dairy cows improves dairy farming?

1. The system tells you when cows are ready for milking, saving time spent on monitoring the herd.
2. The system can sound alarms when cows roam into neighbouring paddocks.
3. The system notices the cows that are unwell, so they are treated quicker, which speeds up recovery time.
4. The system results in more milk from the cows' udders for each milking. C

What does the 'things' in Internet of Things refer to?

1. Smart phones and tablets.
2. Machines and vehicles that operate themselves
3. A physical object with embedded electronics C

The IoT increases the potential for machines to make smart decisions based on collected data, and to act on them, leaving people (apart from the original programmers and those setting the parameters) out of the loop. This is called M2M. Select an example of M2M from the descriptions below.

1. A sensor on a milking cow indicates that she is moving in a way that suggests she in on heat and will be receptive to insemination. She is placed on a watch list and the herd manager chooses to draught her out, after milking, for insemination.
2. An autonomous ambulance on an emergency call approaches an intersection and communicates with the signals to change the lights from red to green, to allow smooth passage through the intersection.
3. Sensors on a bridge detect strain in bridge joints. Areas of concern are flagged with the maintenance team who can respond to specific problems, rather than carrying out lengthy inspections. B

What is the main advantage of IPv6, and why does it suit IoT?

1. IPv6 provides many more IP addresses, which increases the potential number of hosts and amount of data.
2. IPv6 is more up to date protocol with leaner mechanisms which suit modern microprocessors.
3. IPv6 is faster and can carry more data. A

Which of these sentences could be a line of programming code?

1. If temperature is more than 30 degrees C, run fan, else, run heater
2. When it gets too hot, turn the fan on otherwise keep heating the room
3. Run heater until temperature reaches 30 degrees C then cool it down A

Why will IoT put a strain on internet infrastructure?

1. The unprecedented amount of data
2. The variety of IoT protocols
3. The large number of unsecured devices connecting to the internet A

Which of the following is NOT a security measure?

1. Encryption
2. Password
3. Firewall
4. Firmware D

A DC motor requires a current of 10 Amperes to operate at full speed. The battery attached supplies 12 Volts. What resistance is required in the circuit to provide exactly 10 A to the motor?

1. 12 ohms
2. 120 ohms
3. 1.2 ohms C

What type of device is the water valve? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above B

In a communications network, peers can send messages to: (sơ đồ)

1. Peers in the same layer only
2. Peers in any layer
3. Peers in the layers above and below only A

How can IoT help combat climate change?

1. Smart devices working to reduce energy use.
2. Prevention of methane release from cows.
3. Free internet in cities to help people operate in the city more easily.
4. Predictive maintenance of wind turbines, preventing burn out. A

Smart cities use the Internet of Things to improve the quality of citizens' lives. True or False?

1. True
2. False A

Sensors play a big part in the Internet of Things, collecting data from the physical world. There is a long and growing list of sensor types, but some of the more common ones are found in smart phones. Which sensor in your phone collects information on your physical activity for health apps?

1. Gyroscope
2. Magnetometer
3. Proximity sensor
4. Accelerometer D

When the gate system at the dairy closes one gate and opens another to direct a cow into a particular area, what is (or what are) the actuators in play?

1. RF antennae detecting ID of cow
2. Light sensors detecting cow in gate
3. Pneumatic arms on gate mechanism
4. Movement sensor in cow's pendant C

Which of these media is currently NOT used in communicating data?

1. Wireless / electromagnetic waves
2. Hydrogen cables / electron ionisation
3. Fibre optics / pulses of light
4. Copper cables / electrical signals B

When you upload a photo from your camera to a social media site, what kind of path is the information likely to travel?

1. End device -> Modem -> Controller -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server
2. End device -> Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's server -> social media site's ISP
3. End device -> Controller -> Modem -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server
4. Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's ISP -> social media site's server -> End device C

All of the parts of a complete IoT process need programming. But where in the following IoT process is programming needed for the system to be Internet of Things?

1. Soil sensor to microcontroller to the Cloud to microcontroller to fertilising mechanism
2. Soil sensor and Cloud and fertilising mechanism
3. Microcontroller and Cloud
4. Soil sensor and Microcontroller
5. Soil sensor and fertilising mechanism C

What are the descriptors for Big Data? (as coined by IBM)

1. Speed, True, Diversity, Amount
2. Vast, Velocity, Variance, Verified
3. Volume, Velocity, Variety, Veracity C

Which of the following functions does NOT apply to a typical data centre's services?

1. Data storage
2. Data management
3. Data analysis
4. Data security
5. Data generation E

What data security concerns do IoT devices pose?

1. The device being hijacked to harm another device or system
2. Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption
3. The devices being small and embedded into objects makes them easily vandalised or stolen

- - - - - B

The resistance of a heater coil is 10 Ohms and the input voltage is 120V. What is the current?

1. 12 amps
2. 1,200 amps
3. 0.083 amps A

When current flows through a resistor, the power involved produces heat. What measures can be taken to reduce the generation of heat inside a computer?

1. Reduce the voltage from the power supply.
2. Increase the total resistive value in the circuit.
3. Increase the physical size of resistors.
4. Use capacitors on the output of the power supply.
5. All of the above. A

The combination of a transducer with its signal conditioner is called a

?

1. Instrumentation Amplifier
2. Sensor
3. Thermistor
4. ADC B

The combination of conditioning plus the element being controlled by the computer is called a

?

1. DAC
2. Instrumentation amplifier
3. Motor
4. Actuator D

In the system above, what type of device is the outdoor camera? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above A

What type of device is the 100K resistor? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above D

What type of device is the garden light? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above B

What type of device is the internet? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above D

What type of device is the rain detector? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above A

What type of devices are the relays? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above B

What is another way of thinking of the DTE? (sơ đồ)

1. As a Modem
2. As a Computer
3. As a Router B

Which of the following IS NOT criteria to help select a wired communication protocol?

1. Speed
2. Number of wires per connection
3. Ability to transmit and receive information at the same time
4. Number of devices that need connecting
5. Distance to the nearest power point
6. Maximum distance between master and slaves F

Bluetooth uses low power radio waves in the frequency range of ?

A. 2.4 - 2.485Hz

B. 2.4 - 2.485GHz

C. 2.4 - 2.485MHz B

Bluetooth has three classes, namely:

1. Industrial, Scientific, Medical
2. Class 1, Class 2 and Class 3 (100m, 10m and 1m range)
3. I, M and R (Industrial, Mobile and Rarely used) B

Bluetooth is named after:

1. The scientist who invented it, who had blue teeth
2. The company that invented it, Ericsson's founder Harald Bluetooth
3. Danish King, Harald Gormsson who promoted communication between Denmark and Norway C

In an IoT smart home system, sensors are connected to the home power outlet and are required to process some part of the collected data. What would be the best option to connect sensors to each other, as well as a central location for Internet connection, where high data rate is required?

1. Bluetooth
2. 6LowPAN
3. WiFi
4. LoRa C

Fill in the blank: System can be a major problem, especially in badly designed closed-loop systems, as they may try to over-correct any errors which could cause the system to lose control and oscillate.

1. stability
2. scalability
3. security
4. useability
5. feedback A

Which terminology deals with the excitation or stimulus applied to a system from an external source, for the generation of an output?

1. Input signal
2. Output signal
3. Error signal
4. Analogue signal
5. Feedback signal A

One advantage of a closed loop feedback system is:

1. Simplicity of design
2. Ability to react to disturbances in the system
3. It is less stable than an open loop system
4. Depends on calibration for accuracy
5. All of the above B

Bit resolution

Fill in the blank. If we want to measure the temperature of a solution in a chemical process to within 0.1 degree Celsius, over a range of 100 degrees, our development board would need a

converter to meet that requirement for accuracy.

1. 8 bit
2. 10 bit
3. 16 bit
4. 32 bit B

Secret-key encryption is also known as A.Asymmetric encryption

B.Symmetric encryption C.Secret-encryption

D.Private encryption D.Private encryption

When you have a potential IoT idea you want to develop properly, what must you first define? A.Its Unique Value Proposition

1. Problem it sets out to solve
2. Route to market
3. How it will work B.Problem it sets out to solve

Is it useful completing a business plan for a personal or in-house IoT product? A.Yes

B.No A.Yes

What is Fog computing?

1. It is a type of computing that enhances P2P applications.
2. It is a type of computing that sends controller data to a sensor.
3. It is a type of computing that disperses servers and services globally in distributed data centers.
4. It is a type of computing where services are hosted where they are used, such as at the network edge or with end devices D.It is a type of computing where services are hosted

where they are used, such as at the network edge or with end devices.

What is an example of cloud computing?

A.A continuous interaction between people, processes, data, and things.

B.A service that offers on-demand access to shared resources.

C.A network infrastructure that spans a large geographic area.

D.An architectural style of the World Wide Web B. A service that offers on-demand

access to shared resources.

What is used to uniquely identify devices connected to the Internet? A.gateway address

B.IP address

C.device name

D.URL B.IP address

Which word or phrase most accurately sums up the main benefit of IoT technology? A.Accuracy

B.Efficiencies C.Energy use

D.Response time B.Efficiencies

How can IoT help combat climate change? A.Smart devices working to reduce energy use. B.Prevention of methane release from cows.

C.Free internet in cities to help people operate in the city more easily.

D.Predictive maintenance of wind turbines, preventing burn out A.Smart devices working

to reduce energy use.

Which of the following disruptions - caused by vehicles becoming fully autonomous - were the people surveyed most worried about?

1. Reduced private ownership of cars.
2. Less traffic lights on roads.
3. Reduced number of driving jobs.
4. Less space needed for parking.
5. Reduced vehicle emissions D.Less space needed for parking.

Smart cities use the Internet of Things to improve the quality of citizens' lives. True or False? A.True

B.False A.True

Which of the following is one of the ways IoT monitoring of dairy cows improves dairy farming? A.The system tells you when cows are ready for milking, saving time spent on monitoring the herd.

1. The system can sound alarms when cows roam into neighbouring paddocks.
2. The system notices the cows that are unwell, so they are treated quicker, which speeds up recovery time.
3. The system results in more milk from the cows' udders for each milking C.The system

notices the cows that are unwell, so they are treated quicker, which speeds up recovery time.

What are the descriptors for Big Data? (as coined by IBM) A.Speed, True, Diversity, Amount

B.Vast, Velocity, Variance, Verified

C.Volume, Velocity, Variety, Veracity C.Volume, Velocity, Variety, Veracity

Which of the following functions does NOT apply to a typical data centre's services? A.Data storage

1. Data management
2. Data analysis
3. Data security
4. Data generation E.Data generation

Which terminology deals with the excitation or stimulus applied to a system from an external source, for the generation of an output?

1. Input signal
2. Output signal
3. Error signal
4. Analogue signal
5. Feedback signal A.Input signal

Closed-loop Systems use feedback where a portion of the output signal is fed back to the input to reduce errors and improve stability.

1. True
2. False A.True

Which challenge comes under securing the information? A.Signaling

B.Security C.Presence detection

D.Power consumption B.Security

Which challenge comes under IoT devices, reliable bidirectional signaling. A.Signaling

B.Security C.Presence detection

D.Power consumption A.Signaling

Which challenge comes when we use many devices on the same network? A.Signaling

B.Security C.Presence detection

D.Power consumption D.Power consumption

Which of the following issues are considered in IoT? A.Security Issue

B.Reliablity Issue C.Standard Issue

D.All issues D.All issues

IoT is a paradigm that involves ubiquitous presence in the environment. A.True

B.False B.False

IoT stands for A.Industrial Internet of Things B.Internet Internet of Things C.Intelligence Internet of Things

D.Internal Internet of Things A.Industrial Internet of Things

Which possibility ensures load balancing and peak levelling of energy consumption? A.Transportation and logistics

B.Energy and utilities C.Automotive

D.Connected supply chain B.Energy and utilities

Which possibility connects the production line to suppliers? A.Transportation and logistics

B.Energy and utilities C.Automotive

D.Connected supply chain D.Connected supply chain

Which possibility is highest contributor to cost overhead for manufacturing facilities?

A.Transportation and logistics B.Energy and utilities

C.Plant control flow operation

D.Energy management and resource optimization D.Energy management and resource

optimization

will enable the humans to access, control and manage the operation. A.IoT

B.Bigdata C.Network

D.Communication A.IoT

In the embedded devices and objects working under IoT are resource constrained. A.Health

B.Industry C.Home

D.Information system D.Information system

What type of networks is interacting under IoT? A.Heterogeneous only

1. Homogeneous Only
2. Both hetero and homogeneous
3. Neither hetero nor Homo A.Heterogeneous only

Managing of resources can be done by implementing A.Protocols

B.Algorithms C.Networks

D.Protocols and algorithms D.Protocols and algorithms

Resource management will elaborate the key aspects of A.Industrial managements

1. Energy management
2. Network management
3. Information management C.Network management

Which category finds an increase in applications targeting health and fitness? A.Personal IoT

B.Group IoT C.Community IoT

D.Industrial IoT A.Personal IoT

Which category is used in the context of connected cars? A.Personal IoT

B.Group IoT C.Community IoT

D.Industrial IoT B.Group IoT

Which category could be used by citizens to contribute to a smart city? A.Personal IoT

B.Group IoT C.Community IoT

D.Industrial IoT C.Community IoT

Which category is used for business to consumer process? A.Personal IoT

B.Group IoT C.Community IoT

D.Industrial IoT D.Industrial IoT

Voice recognition software and virtual assistant programs offer for and A.Communication

B.Communication and Entertainment C.Entertainment

D.Communication and Software B.Communication and Entertainment

is particularly appealing when the human's hands or eye are otherwise occupied A.Voice recognition

B.Sound recognition C.Amplitude recognition

D.Frequency recognition A.Voice recognition

Voice telephony is an efficient means of with machines that can listen. A.Mono-directional voice communication

B.Bi-directional voice communication C.Voice recognition

D.Both bi directional and mono directional B.Bi-directional voice communication

Without IoT devices can easily lead to catastrophe. A.Software

B.Management system C.Cloud

D.Devices B.Management system

What IoT collects? A.Human generated data

1. Sensor data
2. Machine generated data
3. Device data C.Machine generated data

Which requires data stream management? A.Bigdata

B.IoT

C.Bigdata & IoT

D.Device data B.IoT

The IoT operates at scale A.Machine

B.Human C.Device

D.Sensor A.Machine

Fritzing is open source, free software. A.True

B.False A.True

Which of these is NOT electronic equipment you can use for IoT prototyping? A.Arduino microcontroller

B.Raspberry Pi microprocessor C.Blackberry router

D.LED C.Blackberry router

What does the 'things' in Internet of Things refer to? A.Smart phones and tablets

B.Machines and vehicles that operate themselves

C.A physical object with embedded electronics C.A physical object with embedded

electronics

The IoT increases the potential for machines to make smart decisions based on collected data, and to act on them, leaving people (apart from the original programmers and those setting the parameters) out of the loop. This is called M2M. Select an example of M2M from the descriptions below.

A.A sensor on a milking cow indicates that she is moving in a way that suggests she in on heat and will be receptive to insemination. She is placed on a watch list and the herd manager chooses to draught her out, after milking, for insemination.

B.An autonomous ambulance on an emergency call approaches an intersection and communicates with the signals to change the lights from red to green, to allow smooth passage through the intersection.

C.Sensors on a bridge detect strain in bridge joints. Areas of concern are flagged with the maintenance team who can respond to specific problems, rather than carrying out lengthy inspections B.An autonomous ambulance on an emergency call approaches an

intersection and communicates with the signals to change the lights from red to green, to allow smooth passage through the intersection.

What protocol is good for communication of IoT devices with restricted power and low data rates over a range of a few kilometres ?

A.Bluetooth B.Zigbee C.LoRaWAN D.4G

E.WiFi C.LoRaWAN

What is the main advantage of IPv6, and why does it suit IoT?

1. IPv6 provides many more IP addresses, which increases the potential number of hosts and amount of data.
2. IPv6 is more up to date protocol with leaner mechanisms which suit modern microprocessors.
3. IPv6 is faster and can carry more data A.IPv6 provides many more IP addresses,

which increases the potential number of hosts and amount of data.

Which of these media is currently NOT used in communicating data? A.Wireless / electromagnetic waves

B.Hydrogen cables / electron ionisation C.Fibre optics / pulses of light

D.Copper cables / electrical signals B.Hydrogen cables / electron ionisation

Communication in a network is carried via a ? A.Sensor

B.Router C.Medium D.Device

E.Controller C.Medium

When you upload a photo from your camera to a social media site, what kind of path is the information likely to travel?

1. End device -> Modem -> Controller -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server
2. End device -> Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's server -> social media site's ISP
3. End device -> Controller -> Modem -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server
4. Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's ISP -> social media site's server -> End device C.End device -> Controller -> Modem -> Your ISP ->

Networks and Routers-> social media site's ISP -> social media site's server

Why will IoT put a strain on internet infrastructure? A.The unprecedented amount of data

B.The variety of IoT protocols

C.The large number of unsecured devices connecting to the internet A.The

unprecedented amount of data

Sometimes many devices share the same set of wires. This connection mode is referred to as a

? A.Train B.Bus

C.Multi-point connection B.Bus

In a communications network, peers can send messages to:

1. Peers in the same layer only
2. Peers in any layer
3. Peers in the layers above and below only A.Peers in the same layer only

What is another way of thinking of the DTE? A.As a Modem

B.As a Computer

C.As a Router B.As a Computer

In telecommunications, RS-232 is used for communication transmission of data. A.serial

B.parallel A.serial

Bluetooth uses low power radio waves in the frequency range of ?

A.2.4 - 2.485Hz

B.2.4 - 2.485GHz

C.2.4 - 2.485MHz - - - - - B.2.4 - 2.485GHz

Bluetooth has three classes, namely:

1. Industrial, Scientific, Medical
2. Class 1, Class 2 and Class 3 (100m, 10m and 1m range)
3. I, M and R (Industrial, Mobile and Rarely used) B.Class 1, Class 2 and Class 3 (100m,

10m and 1m range)

Bluetooth is named after:

1. The scientist who invented it, who had blue teeth
2. The company that invented it, Ericsson's founder Harald Bluetooth
3. Danish King, Harald Gormsson who promoted communication between Denmark and Norway

- - - - - C.Danish King, Harald Gormsson who promoted communication between Denmark and Norway

The huge numbers of devices connected to the Internet of things have to communicate automatically, not via humans. What is this called?

1. Bot to Bot (B2B)
2. Machine to Machine (M2M) C.InterCloud

D.Skynet B.Machine to Machine (M2M)

Which characteristics involve the facility the thing to respond in an intelligent way to a particular situation?

A.Intelligence B.Connectivity C.Dynamic Nature

D.Enormous Scale A.Intelligence

empowers IoT by bringing together everyday objects. A.Intelligence

B.Connectivity C.Dynamic Nature

D.Enormous Scale B.Connectivity

The collection of data is achieved with changes. A.Intelligence

B.Connectivity C.Dynamic Nature

D.Enormous Scale C.Dynamic Nature

The number of devices that need to be managed and that communicate with each other will be much larger.

A.Intelligence B.Connectivity C.Dynamic Nature

D.Enormous Scale D.Enormous Scale

a cellular network is expensive, especially with many IoT devices. A.Signaling

B.Security C.Bandwidth

D.Power consumption C.Bandwidth

Communication between and is encrypted for security. A.Cloud and device

1. End user and data center
2. Network and device
3. Cloud and Network B.End user and data center

The embedded devices will form network

A.ATM

B.Ethernet C.FDDI

D.Ad-hoc D.Ad-hoc

are used to overcome the challenges of managing the resources of the IoT. A.Clustering

B.Software agents C.Synchronization techniques

D.Cluster, Software agent, and Synchronization techniques D.Cluster, Software agent,

and Synchronization techniques

BAN stands for A.Body Area Network

1. Brain Area Network
2. Body Android Network
3. Brain Android Network A.Body Area Network

NFC stands for A.Near Fast Communication

1. Near Field Communication
2. Near Field Customer
3. Near Field Connection B.Near Field Communication

Phones act as actuators too. A.True

B.False A.True

WiFi uses how much frequency? A.2.2GHz

B.3GHz C.3.5GHz

D.2.4GHz - - - - - D.2.4GHz

Bluetooth will transmit the data over the frequency band

A.2.4 to 2.7 GHz

B.2.4 to 3 GHz

C.2.4 to 2.485 GHz

D.2.4 to 2.6 GHz - - - - - C.2.4 to 2.485 GHz

Bluetooth operates at short distances. A.True

B.False A.True

Bluetooth will drain battery life. A.True

B.False A.True

What data security concerns do IoT devices pose?

1. The device being hijacked to harm another device or system
2. Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption
3. The devices being small and embedded into objects makes them easily vandalised or stolen -

- - - - B.Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption

How does the addition of data due to IoT create privacy issues?

1. Systems struggle to deal with the large amount of data so data gets 'stuck outside security' waiting to be dealt with
2. Multiple data sets each stripped of identification initially can be combined as a whole and reveal identity
3. More data going through security measures inevitably means more security breakdowns and data leakage
4. IoT devices generally connect wirelessly creating additional harder to secure channels for data hijack B.Multiple data sets each stripped of identification initially can be combined

as a whole and reveal identity

Which of the following is NOT a security measure? A.Encryption

B.Password C.Firewall

D.Firmware D.Firmware

How does fog computing reduce security risks? A.It acts on IoT data closer to the source

1. It creates unclear connections that are difficult to intercept
2. It reduces the need for remote management
3. It scrambles electronic signals and encrypts all data A.It acts on IoT data closer to the

source

The resistance of a heater coil is 10 Ohms and the input voltage is 120V. What is the current?

A.12 amps B.1,200 amps

C.0.083 amps A.12 amps

A DC motor requires a current of 10 Amperes to operate at full speed. The battery attached supplies 12 Volts. What resistance is required in the circuit to provide exactly 10 A to the motor?

A.12 ohms

B.120 ohms

C.1.2 ohms C.1.2 ohms

If you need to increase the current through a resistor in a circuit, what would you do? A.Decrease the voltage applied to the resistor.

1. Increase the voltage applied to the resistor.
2. Increase the room temperature.
3. Increase the value of the resistor.
4. All of the above B.Increase the voltage applied to the resistor.

When current flows through a resistor, the power involved produces heat. What measures can be taken to reduce the generation of heat inside a computer?

1. Reduce the voltage from the power supply.
2. Increase the total resistive value in the circuit.
3. Increase the physical size of resistors.
4. Use capacitors on the output of the power supply.
5. All of the above A.Reduce the voltage from the power supply.

The combination of conditioning plus the element being controlled by the computer is called a

?

A.DAC

B.Instrumentation amplifier C.Motor

D.Actuator D.Actuator

The combination of a transducer with its signal conditioner is called a

?

A.Instrumentation Amplifier B.Sensor

C.Thermistor

D.ADC B.Sensor

What is the microcontroller used in Arduino UNO? A.ATmega328p

B.ATmega2560 C.ATmega32114

D.AT91SAM3x8E A.ATmega328p

What does p refer to in ATmega328p? A.Production

B.Pico-Power

C.Power-Pico

D.Programmable on chip B.Pico-Power

Arduino shields are also called as

A.Extra peripherals B.Add on modules C.Connectivity modules

D.Another Arduinos B.Add on modules

Which is the software or a programming language used for controlling of Arduino? A.Assembly Language

B.C Languages C.JAVA

D.Any Language D.Any Language

A program written with the IDE for Arduino is called

A.IDE source B.Sketch C.Cryptography

D.Source code B.Sketch

Arduino IDE consists of 2 functions. What are they? A.Build() and loop()

1. Setup() and build()
2. Setup() and loop()
3. Loop() and build() and setup() C.Setup() and loop()

How many digital pins are there in the UNO board? A.14

B.12 C.16

20 - - - - -

board allows sewn into clothing.

A.UNO

B.RedBoard C.LilyPad

D.Mega C.LilyPad

There is efficiency gains from all sorts of equipment. A.Implementation

B.Analogous C.Evolution

D.Digitization D.Digitization

A provider which produces 99 percent uptime

1. Security issues
2. Network Issues C.Programming issue

D.Memory issue B.Network Issues

With physical security, the stakes are incredibly

A.Very high B.Low C.Very low

D.High D.High

Which digit does the colour yellow denote on a resistor colour band? A.2

B.4

C.7

D.3 - - - - - B.4

A 47 Kohm resistor would have which colours on its first three bands? A.red, white, blue

1. yellow, violet, white
2. orange, yellow, violet
3. yellow, violet, orange D.yellow, violet, orange

Which digit does the colour orange denote on a resistor colour band? A.9

B.1

C.6

D.3 D.3

A resistor's first three colour bands are red, yellow and black. What is its value?

A.240 ohms

B.24 ohms

C.32 ohms

D.420000 ohms B.24 ohms

Which digit is represented by a blue band on a resistor? A.4

B.8

C.6

D.9 - - - - - C.6

Which digit is represented by a black band on a resistor? A.100

B.1 C.1000

D.0 - - - - - D.0

A resistor's first three colour bands are brown, green and red. What is its value? A.1500 ohms

B.250 ohms C.2000 ohms

D.510 ohms D.510 ohms

Which colour represents the digit 6 in the resistor colour code? A.red

B.blue C.pink

D.green B.blue

Which of these colours is NOT used in the resistor value colour code? A.black

B.turquoise C.white

D.violet B.turquoise

A micro-controller is...

1. small CPU made of transistors and conductors of heat and sound sensor
2. portable circuits capable of making other circuits
3. small computer on a single integrated circuit containing a processor core, memory, and programmable input/output peripherals
4. small chip made of silver A.small CPU made of transistors and conductors of heat and

sound sensor

What does GPIO stand for?

1. General Purpose Inner Outer Propeller
2. General Purpose Interested Old People
3. General Purpose Input Output Pins
4. General Purpose Input Output Processor C.General Purpose Input Output Pins

Before your program "code" can be sent to the board, it needs to be converted into instructions that the board understands. This process is called...

1. Stop
2. Create Sketch C.Compile

D.Serial Monitor C.Compile

This shows you what the IDE is currently doing and is also where error messages display if you make a mistake in typing your program. (often called a syntax error)

1. Sketch Editor
2. Text Console C.Line Number

D.Serial Monitor B.Text Console

This shows you what line number your cursor is on. It is useful since the compiler gives error messages with a line number.

1. Sketch Editor
2. Text Console C.Line Number

D.Serial Monitor C.Line Number

A function is a series of programming statements that can be called by name. Which command is called once when the program starts:

A.loop() B.(output)

C.setup()

D.(input) C.setup()

A function is a series of programming statements that can be called by name. Which command is called repetitively over and over again as long as the Arduino has power.

A.loop() B.(output) C.setup()

D.(input) A.loop()

A function is a series of programming statements that can be called by name. Which command delays the LED by a number of milliseconds is.

1. loop()
2. delay()
3. setup()
4. stop() B.delay()

What is this line of code: // the loop function runs over and over again forever

A.A statement

B.A single line comment

C.A function definition

D.A bowl of cereal B.A single line comment

What is this line of code: void loop() {

A.A statement

B.A single line comment C.Part of a function definition

D.A banana C.Part of a function definition

Which pin has a built-in LED? A.Pin 13

B.Pin 10

C.Pin 8

D.Pin 7 - - - - - A.Pin 13

What are two two main types of Arduino pins? A.Digital and analog.

B.Digital and modulation.

C.Pulse and analog A.Digital and analog.

If you make a voltage divider circuit with R1 = 10K and R2 = 10K, and your Vin is 12V, what will be your Vout?

A.12V B.10V C.6V

D.5V C.6V

How many bits are there in a byte? A.256

B.8 C.16

D.10 - - - - - B.8

On a breadboard, where do you put a DIP package? A.In the middle of the board

B.On the bottom side of the board

C.In the power rails

D.With the potato chips A.In the middle of the board

What is the nominal voltage of 6 AAA batteries connected in parallel? A.6V

B.9V C.12V

D.1.5V - - - - - D.1.5V

This is an unsigned data type that occupies 1 byte of memory. Same as the byte datatype. It encodes numbers from 0 to 255.

A.highByte() B.unsigned char

C.unsigned long

D.volatile B.unsigned char

This is used to include outside libraries in your sketch. This gives the programmer access to a large group of standard C libraries (groups of pre-made functions), and also libraries written especially for Arduino.

A.#include B.break C.void

D.#define A.#include

This clears (writes a 0 to) a bit of a numeric variable. A.bitClear

B.sizeof() C.pinMode

D.#include A.bitClear

The void keyword is used only in function declarations. It indicates that the function is expected to return no information to the function from which it was called.

A.HIGH

B.void C.pin

D.LOW B.void

Sensors play a big part in the Internet of Things, collecting data from the physical world. There is a long and growing list of sensor types, but some of the more common ones are found in smart phones. Which sensor in your phone collects information on your physical activity for health apps?

A.Gyroscope B.Magnetometer C.Proximity sensor

D.Accelerometer D.Accelerometer

In an industrial fan maintenance system, what physical change does Ian Howard say a sensor might detect, measure and transmit data on?

A.Vibration B.Blade speed C.Power

D.Wind direction D.Wind direction

When the gate system at the dairy closes one gate and opens another to direct a cow into a particular area, what is (or what are) the actuators in play?

A.RF antennae detecting ID of cow B.Light sensors detecting cow in gate C.Pneumatic arms on gate mechanism

D.Movement sensor in cow's pendant C.Pneumatic arms on gate mechanism

All of the parts of a complete IoT process need programming. But where in the following IoT process is programming needed for the system to be Internet of Things?

1. Soil sensor to microcontroller to the Cloud to microcontroller to fertilising mechanism
2. Soil sensor and Cloud and fertilising mechanism C.Microcontroller and Cloud

D.Soil sensor and Microcontroller

E.Soil sensor and fertilising mechanism C.Microcontroller and Cloud

Which of these sentences could be a line of programming code?

1. If temperature is more than 30 degrees C, run fan, else, run heater
2. When it gets too hot, turn the fan on otherwise keep heating the room
3. Run heater until temperature reaches 30 degrees C then cool it down A.If temperature

is more than 30 degrees C, run fan, else, run heater

In the reticulation (water irrigation) system, what type of device is the outdoor camera? A.Sensor

B.Actuator C.Control

D.none of the above A.Sensor

What sort of actuator would you use to control the movement of a conveyor belt?

A.A linear actuator B.An AC motor

C.A thermocouple

D.A water pump

E.A rubber belt B.An AC motor

Which of the following IS NOT criteria to help select a wired communication protocol? A.Speed

1. Number of wires per connection
2. Ability to transmit and receive information at the same time
3. Number of devices that need connecting E.Distance to the nearest power point

F.Maximum distance between master and slaves F.Maximum distance between master

and slaves

If we intend to include a servo motor as an actuator, what feature should we include when selecting a microcontroller?

A.Analogue to Digital converter B.Digital to Analogue converter C.GPIO pins

D.Pulse Width Modulation pin

E.I2C pins C.GPIO pins

In an IoT smart home system, sensors are connected to the home power outlet and are required to process some part of the collected data. What would be the best option to connect sensors to each other, as well as a central location for Internet connection, where high data rate is required?

A.Bluetooth B.6LowPAN

C.WiFi

D.LoRa C.WiFi

From the list below, which is the LPWAN technology? A.LoRa

B.WiFi C.LTE

D.6LowPAN A.LoRa

Fill in the blank: System can be a major problem, especially in badly designed closed-loop systems, as they may try to over-correct any errors which could cause the system to lose control and oscillate.

A.stability B.scalability C.security D.useability

E.feedback A.stability

One advantage of a closed loop feedback system is:

A.Simplicity of design

1. Ability to react to disturbances in the system
2. It is less stable than an open loop system
3. Depends on calibration for accuracy
4. All of the above B.Ability to react to disturbances in the system

Fill in the blank. If we want to measure the temperature of a solution in a chemical process to within 0.1 degree Celsius, over a range of 100 degrees, our development board would need a

converter to meet that requirement for accuracy.

A.8 bit

B.10 bit

C.16 bit

D.32 bit B.10 bit

provide the means to create capability that reflects true awareness of the physical world and people.

A.Sensors B.Heterogeneity C.Security

D.Connectivity A.Sensors

in IoT as one of the key characteristics, devices have different hardware platforms and networks.

1. Sensors B.Heterogeneity C.Security

D.Connectivity B.Heterogeneity

IoT devices are naturally vulnerable to threats. A.Sensors

B.Heterogeneity C.Security

D.Connectivity C.Security

What is the popular method of organizing wireless network topologies? A.Software

B.Synchronization C.Network

D.Cluster D.Cluster

What is the role of communication protocol in IoT? A.Smart cities

1. Cyber physical system
2. Mac layer issue
3. Managing energy C.Mac layer issue

Which of the following is the future application of IoT? A.Role of green IoT system

1. QoS in communication
2. Secure communication
3. Multimedia communication A.Role of green IoT system

The object of IoT will be empowered by A.Network

B.Cloud C.Devices

D.Connectivity C.Devices

layer is the communication layer that connects the IoT devices with WAN. A.Internet layer

B.Application layer C.Sensor layer

D.Network layer D.Network layer

either built into smoke alarm and thermostat or in the form of small plug - in. A.Microphones

B.Loudspeaker

C.Microphone and loudspeaker D.Mic A.Microphones

Will reduces the cost of the devices. A.Intuitive

1. Voice telephony
2. Voice recognition
3. Voice Integration D.Voice Integration

How many analog pins on an Arduino Uno board? A.5

B.6

C.7

D.8 - - - - - B.6

Which of the following function is used to set any pin in the state of HIGH/LOW ? A.digitalRead

B.digitalWrite C.analogWrite

D.pinMode B.digitalWrite

What does PWM stand for? A.Pulse Width Modulation

B.Pulse Wide Module C.Preventive Width Modulation

D.None of the other A.Pulse Width Modulation

Which function in the Arduino IDE is used to set any pin in output or input state? A.digitalWrite

B.delay C.pinMode

D.analogRead C.pinMode

How many PWM pins are present in the Arduino UNO? A.1

B.3

C.6

D.9 - - - - - C.6

What among the following is an example of external interrupt for the Arduino? A.Button

B.Resistor

C.LED

D.Capacitor A.Button

What will be the correct syntax to make a digital pin (say D2) as an output pin? A.pinMode(2,output)

B.pinMode(2,Output) C.pinMode(2,OUTPUT)

D.pinmode(2,OUTPUT) C.pinMode(2,OUTPUT)

Which of the following digital pins can be used in Arduino Nano/Uno to give interrupt? A.D2

B.D6 C.D4,D5

D.D2,D3 - - - - - D.D2,D3

What is the size of EEPROM of the Arduino UNO?

* 1. KB

B.2 KB

C.4 KB

D.8 KB A.1 KB

Which function in the Arduino is used to start the serial communication using the COM port? A.Serial.available()

B.Serial.begin() C.serial.begin()

D.setup() B.Serial.begin()

The action that will be performed using this switch case will be:switch (2): {case 1: digitalWrite(11,HIGH); case 2: analogRead(A3)}

A.D11 will become HIGH B.Analog value of A3 will be read C.D11 will become LOW

D.None of the other B.Analog value of A3 will be read

While taking the input from the user in Arduino, which of these function is used in Sketch? A.Serial.print

B.Serial.println C.Serial.available

D.None of the other C.Serial.available

What is the Tinkercad Circuits?

A.Its a just s software to create games

B.Tinkercad is a free online collection of software tools that help people create and simulation circuits.

C.Its a software for playing and create games.

D.None of the other B.Tinkercad is a free online collection of software tools that help

people create and simulation circuits.

How do you zoom in on Tinkercad? A.Spacebar

B.Use the arrows on the keyboard

C.Use the scroll wheel

D.Right Click C.Use the scroll wheel

A photoresistor is an electronic component whose electrical resistance when it is exposed to light.

A.changes B.increases

C.doesn't change A.changes

What does this syntax mean? myservo.attach(9) A.Connect the control wire 9 to GND pin

1. Connect the control wire for 9 seconds
2. Connect the control wire to 9 volts
3. Connect the control wire to digital pin 9 - - - - - D.Connect the control wire to digital pin 9

In remote control terms, IR stands for what? A.indirect radio

B.infrared C.inside remote

D.instant reception B.infrared

Infrared remote controls use what to carry signals between the remote control and the device it controls?

A.radio waves B.sound

C.light C.light

Infrared signals can be used for . A.(a) long-range communication

B.(b) short-range communication C.Both (a) and (b)

D.None of the other B.(b) short-range communication

Which sensor is LM35? A.Pressure sensor

B.Humidity sensor C.Temperature sensor

D.Touch sensor C.Temperature sensor

LM35 provides Volt for each degree count? A.1

B.0.01 C.0.001

D.10 - - - - - B.0.01

What is the main purpose of the SRF05 sensor? A.Water level sensor

1. Sound intensity sensor
2. Ranging sensor
3. Temperature sensor C.Ranging sensor

What is the purpose of the pin named ECHO of HC-SR04 sensor? A.Allows the ultrasonic sound wave to be sent from the sensor.

1. Provides the information that the ultrasonic sound wave is returned.
2. Allows the sensor to be fed with energy.
3. Provides the chassis connection of the sensor B.Provides the information that the

ultrasonic sound wave is returned.

What does the AREF pin on the Arduino UNO? A.Used to trigger a interrupt.

B.Reference voltage for analog inputs. C.To reset the microcontroller.

D.Provides 8-bit PWM signal B.Reference voltage for analog inputs.

What pins can the Arduino UNO board communicate with the computer?

A.PWM pins B.ADC pins C.I2C pins

D.UART pins D.UART pins

What case is called serialEvent() interrupt? A.Serial port shuts down.

1. When data is sent from the serial port.
2. When data comes from the serial port.
3. When the voltage is applied to the Arduino C.When data comes from the serial port.

Each computer has its own Internet search engine. A.True

B.False B.False

What does CRM stand for? A.Customer Research Management

B.Customer Relationship Management C.Customized Research Management

D.Customer Research Metrics B.Customer Relationship Management

How has e-commerce revolutionized business?

1. It has allowed businesses to utilize new avenues of advertising, selling, and distribution.
2. It attempts to level the playing field.
3. It transcends geographic boundaries.
4. All of the above D.All of the above

A allows customers to continue browsing after selecting each item they wish to purchase A.Shopping Cart

B.Forms-based interface C.SSL connection

D.Virtual memory A.Shopping Cart

Which of the following is NOT a standard used in E-Commerce? A.EDI

B.XML C.SETI

D.X12 C.SETI

Which of the following is NOT the characteristics of consumer when studying about EC Consumer Behavior Model?

A.Age B.Gender C.E-mail

D.Education C.E-mail

Mechanism to protect private networks from outside attack is A.Firewall

B.Antivirus C.Digital signature

D.Formatting A.Firewall

While making payment using electronic check, credit and debit cards, the server authenticates the customers and verifies with the bank that funds are adequate before purchase

1. True
2. False A.True

A computer communication technology that provides a way to interconnect multiple computer across short distance is

A.LAN B.WAN C.MAN

D.Wireless network A.LAN

DNS is

1. The distributed hierarchical naming system
2. The vertical naming system
3. The horizontal naming system
4. The client server system C.The horizontal naming system

Which of the following is a technology constraint from the e-commerce macro-environment? A.Propensity for consumers to purchase online.

B.Opt-in to e-mail required to avoid SPAM C.Likelihood of fraudulent transactions

D.Taxation at source of purchase C.Likelihood of fraudulent transactions

In E-Commerce, HTTPS is a communication protocol that uses

1. Public key encryption
2. Secret key encryption
3. Private key encryption
4. Data key encryption A.Public key encryption

The concept of electronic cash is to execute payment by A.Credit Card

B.ATM Card

C.Using computers over network

D.Cheque C.Using computers over network

A chemical manufacturer has transactions that are predominantly:

1. business to consumer.
2. consumer to consumer.
3. consumer to business
4. business to business C.consumer to business.

A B2B reverse auction is:

1. the same as a seller auction.
2. intended to reduce the price by increasing competition from suppliers.
3. always run through a B2B marketplace.
4. both the second and third answers above B.intended to reduce the price by increasing

competition from suppliers.

A computer system that permits multiple users to run programs at same time A.Real time system

B.Multi programming system C.Time sharing system

D.Multi tasking system D.Multi tasking system

The mercantile process model consists of the following phase(s): A.The pre-purchase phase

B.Purchase consummation phase C.Post-purchase Interaction phase

D.All of the above D.All of the above

The most serious disadvantage of e-auctions is: A.the risk of fraud.

1. Logistics.
2. unreliable auction software.
3. payment delays A.the risk of fraud.

Many companies use intermediaries or trading assistants instead of implementing e-auctions themselves for each of the following reasons EXCEPT:

1. The company name is not widely recognized.
2. To bring many more buyers to the auction.
3. To avoid tax and legal fees.
4. Costs of auction intermediaries or assistants are less than the costs of physical auctions. - - -

* - C.To avoid tax and legal fees.

All of the following are potential benefits from auctions to sellers EXCEPT: A.auctions can broaden the customer base and reduce cycle time.

1. sellers receive valuable price sensitivity information.
2. sellers are always anonymous.
3. sellers can liquidate large quantities of obsolete items very quickly C.sellers are

always anonymous.

Select the correct answer from the choices below which is corresponding with the following statement in STRATEGIC PLANNING TOOLS" : It is a methodology that surveys external opportunities and threats and relates them to internal strengths and weaknesses.

A.SWOT analysis B.strategy map

C.balanced scorecard

D.BCG matrix A.SWOT analysis

A major shortcoming with authentication services is:

1. two different authenticators may come up with different opinions regarding the authenticity and description of a given item.
2. it is impossible to tell whether many items are reproductions or genuine. C.dishonest authenticators are the primary sources of fraud on the Internet.

D.most auction sites forbid the use of authentication services A.two different

authenticators may come up with different opinions regarding the authenticity and description of a given item.

work best with many buyers and many sellers.

A.Bartering B.Dynamic exchanges

C.Forward auctions

D.Reverse auctions A.Bartering

The services provided through location-based m-commerce focus on key factors which include all of the following EXCEPT:

A.Geocaching, or determining the topography of an area. B.Navigation, or plotting a route from one location to another. C.Tracking, or monitoring the movement of a person or thing.

D.Timing, or determining the precise time at a specific location A.Geocaching, or

determining the topography of an area.

Infrastructures that "support" the wireless connection are:

A.network access points, mobile communications server switches, and cellular transmitters and receivers.

B.WAP gateways, GPS locators, and GPS satellites. C.PDAs, smartphones, and portable computers.

D.web servers, mobile devices, and microbrowsers A.network access points, mobile

communications server switches, and cellular transmitters and receivers.

A is suitable for mobile users who need to make very short-range device-to-device wireless connections within a small space, such as a single room, and most commonly with Bluetooth.

1. personal area network
2. local area network
3. wireless area network
4. metropilitan area network A.personal area network

You are walking near a coffee shop and suddenly your cell phone beeps with a message: "Come inside and get a free biscotti with any purchase." This is an example of:

A.permission marketing B.location-based advertising

C.customer relationship management

D.m-commerce C.customer relationship management

One way to share information with supply chain partners is wireless , which is the science of measuring physical phenomena such as temperature, volume, or an on/off condition at a remote point and transmitting the value to a distant recorder or observer

A.RFID

B.mobilization C.osmosis

D.telemetry D.telemetry

WiMax and 3G wireless mobile technologies offer telemedicine application opportunities that include all of the following EXCEPT:

1. Reduced threat of malpractice suits because there is no hands-on interaction between the remote physician and the patient.
2. Prescriptions can be transferred electronically to the appropriate pharmacy for a no-wait pick- up by the patient.
3. Real-time consultation between a patient in one location and a medical specialist in another. D.Wearable heart monitors linked to a cell phone can automatically contact doctors or family members at the first sign of health problems A.Reduced threat of malpractice suits

because there is no hands-on interaction between the remote physician and the patient.

All of the following about RFID are true EXCEPT:

1. An RFID tag can hold 20 times the amount of information a bar code can hold, and the tag can be read through cardboard, wood, and plastic at a range of up to 100 feet
2. An RFID tag includes an antenna and a chip with information about the item
3. An RFID reader contains a radio transmitter and receiver
4. An RFID tag remains inactive until radio frequency energy from the tag's radio transmitter hits its antenna, giving the chip enough power to emit a 96-bit string of information A.An RFID

tag can hold 20 times the amount of information a bar code can hold, and the tag can be read through cardboard, wood, and plastic at a range of up to 100 feet

Digital Signature is

1. Scanned Signature on Computer
2. Code number of the sender
3. Public Key Encryption
4. Software to recognize signature D.Software to recognize signature

The method(s) of payment for online consumers are A.Electronic cash

B.Credit/debit C.Electronic checks

D.All of the above D.All of the above

Which of the following statements are INCORRECT about company-centric marketplaces? A.They are marketplaces which focus on a single company's purchasing needs or selling needs.

1. They are generally public entities owned by that company.
2. They support for buying needs (many to one, or buy-side).
3. They support for selling needs (one to many, or sell-side) B.They are generally public

entities owned by that company.

As in e-commerce, m-commerce B2C applications are concentrated in each of the following areas EXCEPT:

A.retail shopping for products and services B.telecommunications

C.targeted advertising

D.providing content for a fee through mobile portals B.telecommunications

All of the following about wireless wide area networks (WWAN) are true EXCEPT:

1. The single WWAN network standard insures compatibility of handsets within and between countries.
2. Most WWANs are cellular phone networks.
3. At the center of each cell is a base station transceiver or cell tower that is used to send and receive signals to and from mobile devices operating within the cell.
4. When a device is turned on, a SIM card inside the device identifies itself to the WWAN. - - - - -
5. The single WWAN network standard insures compatibility of handsets within and between countries.

Which of the following is an example of edutainment? A.Two or more students sharing music over the Internet

1. An online science fiction game whose object is to blast as many aliens as possible in a 60 second round

C.A community college providing an online college course on digital media

D.An online game that uses colorful characters to teach young children about numbers - - - - -

D.An online game that uses colorful characters to teach young children about numbers

Which of the following statements about blogs is not true?

A.A blog is a personal Web site, open to the public, in which the owner expresses his or her feelings or opinions.

1. Blogs became very popular after the September 11, 2001 terrorist attacks when people were looking for as many sources of information as possible and for personal connections to the tragedy.
2. Blogs are limited to one-way communication.
3. The most common types of blogs are professional blogs C.Blogs are limited to one-

way communication.

P2P systems have all of the following key characteristics EXCEPT:

1. They provide for real-time access to other users through techniques such as instant messaging and multichannel collaboration applications.
2. The users' computers can act as both clients and servers.
3. The overall system is well integrated, but lacks tools for easy creation of content or for adding functionalities.
4. They support cross-networking protocols such as SOAP or XML-RPC, which enables a program on one computer to execute a program on a server computer C.The overall

system is well integrated, but lacks tools for easy creation of content or for adding functionalities.

More and more people are willing to pay for digital music, as shown by the success of

.

A.Napster B.Kazaa C.Apple's iTunes

D.P2P C.Apple's iTunes

All of the following are examples of e-government EXCEPT:

A.a company sells army and navy surplus supplies at auction over the Internet.

B.a contractor submits an application for a building permit using a city hall Web site.

C.an unemployed worker consults a Web site operated by the state employment department to learn about job openings in his city.

D.a state purchasing officer places an online order for office supplies from an e-catalog sent to her by a national office supply store A.a company sells army and navy surplus supplies

at auction over the Internet.

A(n) is a computer system capable of integrating, storing, editing, analyzing, sharing, and displaying spatial information.

A.geographical information system B.global positioning system

C.l-commerce system

D.on-star system A.geographical information system

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4. They support cross-networking protocols such as SOAP or XML-RPC, which enables a program on one computer to execute a program on a server computer A.They provide for

real-time access to other users through techniques such as instant messaging and multichannel collaboration applications

The tasks of KM include each of the following EXCEPT:

A.creating knowledge repositories where knowledge can be stored and retrieved easily B.enhancing a knowledge environment in order to conduct more effective knowledge creation, transfer, and use

C.restricting knowledge access to prevent its transfer between individuals

D.managing knowledge as an asset so as to increase the effective use of knowledge assets over time C.restricting knowledge access to prevent its transfer between individuals

involves using various computer-based tools and techniques to analyze transaction data and generate new ideas

A.Knowledge creation B.Knowledge capture C.Knowledge classification

D.Knowledge management A.Knowledge creation

Most universities use e-learning:

1. exclusively in reaching students who couldn't otherwise attend classes.
2. only when forced by administrators to use it as a way to recruit distant students or reduce costs.
3. as a total replacement for traditional classrooms.
4. as a supplementary channel to traditional classrooms D.as a supplementary channel

to traditional classrooms.

One initiative underway that could lead to widespread support for the introduction of RFID is the

, which identifies the manufacturer, producer, version, and serial number of each item and does not require line-of-sight contact to be read.

A.Electronic Product Code B.Universal Product Code C.Smart Product Network

D.Sensor Network A.Electronic Product Code

Wal-Mart and Levi Strauss collaborate on demand forecasting in order to optimize the flow of materials along the supply chain. This is an example of:

A.reducing design cycle time

B.APS (Advanced Planning and Scheduling)

C.CPFR (Collaborative Planning, Forecasting and Replenishment)

D.reducing product development time C.CPFR (Collaborative Planning, Forecasting and

Replenishment)

A major block in the widespread implementation of collaborative commerce is:

1. the theory of collaborative commerce hasn't been proven effective in real-world applications.
2. the technology needed isn't available. C.collaborative commerce is extremely expensive.

D.the lack of universally accepted standards D.the lack of universally accepted

standards.

When you have a potential IoT idea you want to develop properly, what must you first define? A.Its Unique Value Proposition

1. Problem it sets out to solve
2. Route to market
3. How it will work B.Problem it sets out to solve

What is used to uniquely identify devices connected to the Internet? A.gateway address

B.IP address

C.device name

D.URL B.IP address

What data security concerns do IoT devices pose?

1. The device being hijacked to harm another device or system
2. Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption
3. The devices being small and embedded into objects makes them easily vandalised or stolen -

- - - - B.Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption

IoT gateway is:

1. Physical device
2. Software program
3. Raspberry Pi
4. All of the above D

(True or False)

Gateways can be configured to perform pre-processing of the collected data from thousands of sensors locally before transmitting it to the next stage.

1. True
2. False A

IoT gateways perform several critical functions such as: (Which one is wrong).

1. Device connectivity
2. Protocol translation
3. Improving networks
4. Data filtering and processing, security C

An IoT gateway device bridges the communication gap between: (Which one is wrong).

1. end users
2. IoT devices
3. Sensors
4. cloud A

Before purchasing one gateway device you should consider: (Which one is wrong).

1. Network Security
2. Uptime
3. Power
4. Downtime B

Which one isn't key core principles of security for IoT gateway.

1. Strategy
2. Confidentiality
3. integrity
4. authentication A

Which device is often to be attacked in IoT system.

A. Sensor B.Actuator

C. Gateway

D. Cloud Server C

The maximum number of IPv4 address is: A. 2^32

B. 2^64

C. 2^128

D. 2^256 A

The maximum number of IPv6 address is: A. 2^32

B. 2^64

C. 2^128

D. 2^256 C

How many byte an IPv4 address has:

1. 32
2. 4
3. 16
4. 64 B

Which of the following IPv4 address is in correct format. A. 172.16.400.3

B. 172.a4.400.3

C. 172.16.286.3

D. None of the above D

The benefits of IPv6 are (which one is wrong).

1. more private address collisions
2. Auto-configuration
3. Flexible options and extensions
4. No more NAT (Network Address Translation) A

Which of the following IP address is wrong? A. 43.126.38.91

B. 126.133.254.1

C. 22.131.256.3

D. 222.222.222.222 C

The protocol for Internet is:

1. TCP/IP
2. ZigBee
3. Wi-Fa
4. Bluetooth A

An automatic telephone switch has:

1. Memory
2. Service logic
3. Controller
4. All of the above D

Are VPNs legal?

1. Yes in all countries
2. Not at all
3. Yes In some countries
4. Needs permission In the USA C

What you should considered more when you are buying VPN:

1. Speed, privacy and security
2. Cost
3. Security
4. Free trials and money back guarantees, A

It is safe to use public Wi-Fi hotspots if you are connected to

1. Internet server
2. ISP
3. VPN provider
4. All of the above A

Which one is wrong for cloud and IoT cloud?

1. The cloud is just a metaphor for the Internet
2. The cloud is a Secure Internet provider
3. Cloud integrates billions of devices, sensors, gateways, protocols and data storage
4. IoT cloud is a sophisticated high performance network of servers B

Which one is wrong for cloud and IoT cloud?

1. IoT cloud covers all things, objects, people and animals
2. Internet clouds covers all computers, mobiles, other peripherals and people
3. All countries must use one IoT Network
4. No difference between IT cloud and IoT cloud
5. Cloud computing and Internet of Things (IoT) are two very different technologies D

What are not the major components of Internet of Things?

1. Cloud
2. ISP
3. User Interface
4. Analytics B

IoT Networks must be standard, because:

1. Different devices are manufactured by different companies!
2. Of security
3. All countries must use one IoT Network
4. None of the above A

Which one is NOT an example of user interface?

1. Smartphone
2. www - web pages
3. Gateway
4. Your PC C

For sending signals via radio stations channels, you should either:

1. Increase Power Energy of radio station or Decrease Bandwidth!
2. Increase Power Energy of radio station and Increase Bandwidth!
3. Decrease Power Energy of radio station and Decrease Bandwidth!
4. Decrease Power Energy of radio station or Increase Bandwidth! A

Morse communication sends characters less than:

1. 4K bit/second
2. 100 bit/second
3. 20 bit/second
4. 1K bit/second C

Which one is wrong about Bandwidth and Range?

1. NFC has Low BW and Low Range
2. Bluetooth has Low BW and Low Range
3. Lora has Low BW and Low Range
4. Mobile 4G/LTE has Low BW and Low Range D

The four important layers in IoT Ecosystems are:

1. sensor layer
2. network layer
3. platform layer
4. application layer
5. all of the above E

What are the major components of the Internet of Things:

1. Things/devices
2. gateway
3. cloud
4. analytics
5. user interface
6. all of the above F

What is the difference b/w Normal Device and IoT Devices?

1. Connected devices is about connecting and communicating b/w devices
2. However, IoT goes beyond to include people, things, and software systems
3. A and B C

Types of networks include:

1. PAN
2. LAN
3. MAN
4. WAN
5. all of the above E

Some examples of wireless technology are:

1. Cordless phone
2. GPS units
3. Wireless computer parts/satellite tv
4. Zigbee, cellular, wireless networking, LoRa, LiFi,Wifi, BT E all of the above E

NFC allows a short range of less than:

1. 20 cm
2. More than 20 cm
3. less than 20 mm
4. more than 20 mm A

Only veryy few cell phones support NFS as it has:

1. Low transmission capacity
2. High transmission capacity
3. Medium transmission capacity
4. Non transmission capacityy A

The wireless communication tech not belong in the home area network is:

1. RFID
2. NFC
3. Wi-Fi
4. LoRa D

In IoT networking, we need the WAN because:

1. We want to communicate with IoT devices everywhere.
2. We want to communicate with ppl everywhere
3. We want to communicate with high performance apps
4. we want to communicate with high security A

Radio stations, for sending signals far from stations using:

1. High power Energy (Kilowatt)
2. High Power Energy (Megawatt)
3. High Frequency (Kilo Hertz)
4. High Frequency (Mega Hertz) A

IoT Network's need:

1. To use low power energy
2. To use high power energy
3. to send signals not far from transmitter
4. a and b are correct D

In IoT networks we are looking for:

1. sending signals far, using low power energy
2. sending signals near using low power energy
3. sending signals far, using high power energy
4. sending signals near, using high power energy A

The correct definition for bandwidth is:

1. capacity of channel
2. the range of frequencies within a given band, in particular that used for transmitting a signal
3. Rate at which electronic signals can travel thru a medium such as wire, cable, or channel.
4. all the above D

For sending signals via radio stations channels, you should either:

1. increase power energy of radio station or decrease bandwidth
2. decrease power energy of radio station or decrease bandwidth
3. increase power energy of radio station or increase bandwidth
4. decrease power energy of radio station or increase bandwidth A

Bandwidth may be thought of as the width of the 'pipe' through which data travels:

1. Greater the width, larger the amount of data can flow through it.
2. Smaller the width, larger the amount of data can flow through it.
3. Greater the width, smaller the amount of data can flow through it.
4. smaller the width, larger the amount of data can flow through it A

Morse communications sends characters less than:

1. 4k bit/second
2. 100 bit/second
3. 20 bit/second
4. 1k bit /second C

About the bandwidth and range of NFC, which one is correct?

1. low BW and low range
2. high BW and low range
3. low BW and high range
4. high BW and high range A

Bluetooth is used:

1. for small devices low BW and small battery
2. for small devices high BW and small battery
3. for small devices low BW and big battery
4. for large devices low BW and small battery A

Which one is correct for LoRa technology?:

1. Low BW but long range (no limit by physics, limited by human)
2. High BW but long range (no limit by physics, limited by human)
3. Low BW but long range (no limit by physics and by human)
4. High BW but long range (no limit by physics and by human) A

Which of the following technology is closer to the standard of mobile technology?

1. LoRa
2. NSF
3. RFID
4. Bluetooth A

Which one related to bandwidth and range, is wrong?

1. NFC has low BW and low range
2. Bluetooth has lowBW and low range
3. LoRa has low BW and low range
4. Mobile 4G/LTE has low BW and Low Range D

Most modern smart devices and sensors can be connected to low power wireless networks like WiFi, ZigBee, Bluetooth, Z-wave, LoRaWan and each of these wireless technologies has its own pros and cons in terms of:

1. Power
2. Data transfer rate
3. Overall efficiency
4. All of the above D

In the area of IoT developments, researchers are looking for:

1. Low power, low cost wireless transmitting devices
2. Long battery life
3. Efficiency of battery
4. All of the above D

In order to achieve intelligent D2D communication, devices require:

1. intelligent routing protocols
2. intelligent routing internet
3. intelligent routing gateway
4. intelligent routing routers A

ZigBee is an IEEE 802.15.4-based spec for a squire of high level comm protocols used to create PANs w/ small, low-power digital radios, such as home automation, medical device data collection, and other low-power low-bandwidth needs, designed for small scale projects which need wireless connection

1. True
2. False A

ZigBee is:

1. A low power
2. Low data rate
3. Close proximity
4. All of the above D

Protocol IEEE 802.11 is:

1. a set of media access controls(MACs)
2. a set of physical layers
3. Specifications for implementing WLAN computer communication in the 900 MHz and 2.4,3.6, 5, and 60 GHz frequency bands.
4. The standard and amendments provide the basis for wireless network products using WiFi brand
5. all of the above E

Wi-Fa is a technology for wireless local area networking with devices based on:

1. IEEE 802.11 standards
2. Wi-Fi using radio waves
3. Wi-Fa providing wireless high speed intternet
4. Wi-Fi providing network connections
5. all of the above E

Which one is correct in terms of Wi-Fi:

1. Wireless Fidelity
2. Wi-Fi is simple a trademarked phrase that means: IEEE 802.11x
3. Wi-Fi is wired technology
4. Wi-Fi is useful for WAN network B

What is used to provide IoT sensors access to the network? A microcontroller

What limits the type of different objects that can become intelligent sensors on the internet of things Doorbells, garage doors, smartwwtvhes

What devices provides auto discovery services for smart devices that are connected to the network The home gateway

What are two requirements to connect a smart device to a home wireless network An IP

address and an SSID

What are two things that all digital devices need in order to work? Data & programing

What is the purpose of packet tracer? To simulate and visualize one or more networks

What is the largest network in existence? The internet

What type of network is the connection between a Bluetooth headset and a vehicle? PAN

Which type of network consists of wired computers in a college classroom? LAN

What is an open source physical computing platform that can take input from a variety of switches or sensors to control physical objects? Arduino

Which technology is used as a visual programming tool to create a program by connecting colored blocks Blocky

Which two skills help with IoT prototyping? Programing, design

Which describes global variables in programming languages? Anywhere in a program it

can be used

What are two characteristics of the Python programming language? Easy to read code &

it runs without conversion to machine learning

Change will have to occur in the corporate network in order to prepare for the Internet of things. Which type of testing would a company do to demonstrate the benefits of networking a new "thing" that was not on the network before Prototyping

What are three attributes of data that would indicate that it may be big data Variety,

volume, velocity

What are three benefits of cloud computing It eliminates or reduces the need for onsite

maintenance and management

What is the purpose of data analytics To gain insights from data

How was data that has been collected through sources such as webpages, audio, or tweets categorized? Unstructured

True or false? Comma-separated values (CSV), JSON and XML are all tools that can be used to manipulate structured data True

Mined data can be visualized through the use of charts. What are the criteria that can be used to determine the best chart selection Number of variables shown

Items requiring comparison.

What are two features of automation? A process that is self driven & process that might

eliminate human intervention

Which technology has the intelligence that is demonstrated by machine in a way that mimics human cognitive functions? AL

Which technology is a subset of AL that uses statistical technique to enable computers to "learn" from collected data ML (machine learning)

What is a key feature of the assurance element of the intent-based networking model? - - - - -

End to end Verification of network

Which security best practices involves defining company rules, job duties and expectations - - - -

* Developing a security policy

What are two areas of physical security which Outside perimeter security & inside

perimeter security

A company requires using a secure encrypted Internet connection when connecting to the corporate network from outside the company. Which technology should be used when employees travel and use a laptop VPN

Which character is used within a search engine to gather data efficiency by placing the character before and after the name of the particular person Quotation marks

Which two type of institutions do malicious web pages often look like Bank website &

financial institution

What are some examples of data types that would be classified as personally identifiable information (PII) Social security number, email address, bank account number, fingerprint

True or false? With artificial intelligence, smart devices can modify processes and settings on the fly in responses to changes on the network True

What is the core components of intent-based networking? Artificial intelligence

FOR Repeat the execution of a specific block of code for a specific number of times

While Execute A block of code while condition is true

IF THEN Allow the code to make decisions

fog computing An architecture that utilizes edge devices for data pre-processing and

storage

Cloud services A collection of data centers or connected servers that provide anywhere

anytime access to data and applications

Distributed processing Breaks large volumes of data into smaller pieces which are

processed by computers in different locations

Hadoop A comprehensive ecosystem of open source software for big data management

In an industrial fan maintenance system, what physical change does Ian Howard say a sensor might detect, measure and transmit data on?

1. Vibration
2. Blade speed
3. Power
4. Wind direction A. Vibration

Which word or phrase most accurately sums up the main benefit of IoT technology?

1. Economies
2. Enhanced safety
3. Accuracy
4. Efficiencies
5. Energy use
6. Response time D

What protocol is good for communication of IoT devices with restricted power and low data rates over a range of a few kilometres ?

Which of these media is currently NOT used in communicating data? Wireless / electromagnetic waves

Hydrogen cables / electro ionisation Fibre optics / pulses of light

Copper cables / electrical signals

1. Bluetooth
2. Zigbee
3. LoRaWAN
4. 4G
5. WiFi C

Communication in a network is carried via a ?

1. Sensor
2. Router
3. Medium
4. Device
5. Controller C

How does the addition of data due to IoT create privacy issues?

1. Systems struggle to deal with the large amount of data so data gets 'stuck outside security' waiting to be dealt with
2. Multiple data sets each stripped of identification initially can be combined as a whole and reveal identity
3. More data going through security measures inevitably means more security breakdowns and data leakage
4. IoT devices generally connect wirelessly creating additional harder to secure channels for data hijack B

How does fog computing reduce security risks?

1. It acts on IoT data closer to the source
2. It creates unclear connections that are difficult to intercept
3. It reduces the need for remote management
4. It scrambles electronic signals and encrypts all data A

A vacuum cleaner has a maximum power consumption of 1000 W and is powered by 240 Volts. What is the current used?

1. 24 amps
2. 4.17 amps
3. 0.24 amps B

If you need to increase the current through a resistor in a circuit, what would you do?

1. Decrease the voltage applied to the resistor.
2. Increase the voltage applied to the resistor.
3. Increase the room temperature.
4. Increase the value of the resistor.
5. All of the above B

What type of device is the door alarm? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above A

What type of device is the moisture detector? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above A

What type of device is the CPU? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above C

What type of devices are the power supplies? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above D

Sometimes many devices share the same set of wires. This connection mode is referred to as a

? (sơ đồ)

1. Train
2. Bus
3. Multi-point connection B

What sort of actuator would you use to control the movement of a conveyor belt?

1. A linear actuator
2. An AC motor
3. A thermocouple
4. A water pump
5. A rubber belt B

If we intend to include a servo motor as an actuator, what feature should we include when selecting a microcontroller?

1. Analogue to Digital converter
2. Digital to Analogue converter
3. GPIO pins
4. Pulse Width Modulation pin
5. I2C pins D

Which of the following disruptions - caused by vehicles becoming fully autonomous - were the people surveyed most worried about?

1. Reduced private ownership of cars.
2. Less traffic lights on roads.
3. Reduced number of driving jobs.
4. Less space needed for parking.
5. Reduced vehicle emissions A

Which of the following is one of the ways IoT monitoring of dairy cows improves dairy farming?

1. The system tells you when cows are ready for milking, saving time spent on monitoring the herd.
2. The system can sound alarms when cows roam into neighbouring paddocks.
3. The system notices the cows that are unwell, so they are treated quicker, which speeds up recovery time.
4. The system results in more milk from the cows' udders for each milking C

What does the 'things' in Internet of Things refer to?

1. Smart phones and tablets.
2. Machines and vehicles that operate themselves
3. A physical object with embedded electronics C

The IoT increases the potential for machines to make smart decisions based on collected data, and to act on them, leaving people (apart from the original programmers and those setting the parameters) out of the loop. This is called M2M. Select an example of M2M from the descriptions below.

1. A sensor on a milking cow indicates that she is moving in a way that suggests she in on heat and will be receptive to insemination. She is placed on a watch list and the herd manager chooses to draught her out, after milking, for insemination.
2. An autonomous ambulance on an emergency call approaches an intersection and communicates with the signals to change the lights from red to green, to allow smooth passage through the intersection.
3. Sensors on a bridge detect strain in bridge joints. Areas of concern are flagged with the maintenance team who can respond to specific problems, rather than carrying out lengthy inspections B

What is the main advantage of IPv6, and why does it suit IoT?

1. IPv6 provides many more IP addresses, which increases the potential number of hosts and amount of data.
2. IPv6 is more up to date protocol with leaner mechanisms which suit modern microprocessors.
3. IPv6 is faster and can carry more data A

Which of these sentences could be a line of programming code?

1. If temperature is more than 30 degrees C, run fan, else, run heater
2. When it gets too hot, turn the fan on otherwise keep heating the room
3. Run heater until temperature reaches 30 degrees C then cool it down A

Why will IoT put a strain on internet infrastructure?

1. The unprecedented amount of data
2. The variety of IoT protocols
3. The large number of unsecured devices connecting to the internet A

Which of the following is NOT a security measure?

1. Encryption
2. Password
3. Firewall
4. Firmware D

A DC motor requires a current of 10 Amperes to operate at full speed. The battery attached supplies 12 Volts. What resistance is required in the circuit to provide exactly 10 A to the motor?

1. 12 ohms
2. 120 ohms
3. 1.2 ohms C

What type of device is the water valve? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above B

In a communications network, peers can send messages to: (sơ đồ)

1. Peers in the same layer only
2. Peers in any layer
3. Peers in the layers above and below only A

How can IoT help combat climate change?

1. Smart devices working to reduce energy use.
2. Prevention of methane release from cows.
3. Free internet in cities to help people operate in the city more easily.
4. Predictive maintenance of wind turbines, preventing burn out A

Smart cities use the Internet of Things to improve the quality of citizens' lives. True or False?

1. True
2. False A

Sensors play a big part in the Internet of Things, collecting data from the physical world. There is a long and growing list of sensor types, but some of the more common ones are found in smart phones. Which sensor in your phone collects information on your physical activity for health apps?

1. Gyroscope
2. Magnetometer
3. Proximity sensor
4. Accelerometer D

When the gate system at the dairy closes one gate and opens another to direct a cow into a particular area, what is (or what are) the actuators in play?

1. RF antennae detecting ID of cow
2. Light sensors detecting cow in gate
3. Pneumatic arms on gate mechanism
4. Movement sensor in cow's pendant C

Which of these media is currently NOT used in communicating data?

1. Wireless / electromagnetic waves
2. Hydrogen cables / electron ionisation
3. Fibre optics / pulses of light
4. Copper cables / electrical signals B

When you upload a photo from your camera to a social media site, what kind of path is the information likely to travel?

1. End device -> Modem -> Controller -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server
2. End device -> Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's server -> social media site's ISP
3. End device -> Controller -> Modem -> Your ISP -> Networks and Routers-> social media site's ISP -> social media site's server
4. Controller -> Modem -> Your ISP -> Networks and Routers -> social media site's ISP -> social media site's server -> End device C

All of the parts of a complete IoT process need programming. But where in the following IoT process is programming needed for the system to be Internet of Things?

1. Soil sensor to microcontroller to the Cloud to microcontroller to fertilising mechanism
2. Soil sensor and Cloud and fertilising mechanism
3. Microcontroller and Cloud
4. Soil sensor and Microcontroller
5. Soil sensor and fertilising mechanism C

What are the descriptors for Big Data? (as coined by IBM)

1. Speed, True, Diversity, Amount
2. Vast, Velocity, Variance, Verified
3. Volume, Velocity, Variety, Veracity C

Which of the following functions does NOT apply to a typical data centre's services?

1. Data storage
2. Data management
3. Data analysis
4. Data security
5. Data generation E

What data security concerns do IoT devices pose?

1. The device being hijacked to harm another device or system
2. Because they are small and low powered, they can't carry much software including security software leaving them open to data theft or disruption
3. The devices being small and embedded into objects makes them easily vandalised or stolen

- - - - - B

The resistance of a heater coil is 10 Ohms and the input voltage is 120V. What is the current?

1. 12 amps
2. 1,200 amps
3. 0.083 amps A

When current flows through a resistor, the power involved produces heat. What measures can be taken to reduce the generation of heat inside a computer?

1. Reduce the voltage from the power supply.
2. Increase the total resistive value in the circuit.
3. Increase the physical size of resistors.
4. Use capacitors on the output of the power supply.
5. All of the above A

The combination of a transducer with its signal conditioner is called a

?

1. Instrumentation Amplifier
2. Sensor
3. Thermistor
4. ADC B

The combination of conditioning plus the element being controlled by the computer is called a

?

1. DAC
2. Instrumentation amplifier
3. Motor
4. Actuator D

In the system above, what type of device is the outdoor camera? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above A

What type of device is the 100K resistor? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above D

What type of device is the garden light? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above B

What type of device is the internet? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above D

What type of device is the rain detector? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above A

What type of devices are the relays? (sơ đồ)

1. Sensor
2. Actuator
3. Control
4. None of the above B

What is another way of thinking of the DTE? (sơ đồ)

1. As a Modem
2. As a Computer
3. As a Router B

Which of the following IS NOT criteria to help select a wired communication protocol?

1. Speed
2. Number of wires per connection
3. Ability to transmit and receive information at the same time
4. Number of devices that need connecting
5. Distance to the nearest power point
6. Maximum distance between master and slaves F

Bluetooth uses low power radio waves in the frequency range of ?

A. 2.4 - 2.485Hz

B. 2.4 - 2.485GHz

C. 2.4 - 2.485MHz B

Bluetooth has three classes, namely:

1. Industrial, Scientific, Medical
2. Class 1, Class 2 and Class 3 (100m, 10m and 1m range)
3. I, M and R (Industrial, Mobile and Rarely used) B

Bluetooth is named after:

1. The scientist who invented it, who had blue teeth
2. The company that invented it, Ericsson's founder Harald Bluetooth
3. Danish King, Harald Gormsson who promoted communication between Denmark and Norway C

In an IoT smart home system, sensors are connected to the home power outlet and are required to process some part of the collected data. What would be the best option to connect sensors to each other, as well as a central location for Internet connection, where high data rate is required?

1. Bluetooth
2. 6LowPAN
3. WiFi
4. LoRa C

Fill in the blank: System can be a major problem, especially in badly designed closed-loop systems, as they may try to over-correct any errors which could cause the system to lose control and oscillate.

1. stability
2. scalability
3. security
4. useability
5. feedback A

Which terminology deals with the excitation or stimulus applied to a system from an external source, for the generation of an output?

1. Input signal
2. Output signal
3. Error signal
4. Analogue signal
5. Feedback signal A

One advantage of a closed loop feedback system is:

1. Simplicity of design
2. Ability to react to disturbances in the system
3. It is less stable than an open loop system
4. Depends on calibration for accuracy
5. All of the above B

Bit resolution

Fill in the blank. If we want to measure the temperature of a solution in a chemical process to within 0.1 degree Celsius, over a range of 100 degrees, our development board would need a

converter to meet that requirement for accuracy.

1. 8 bit
2. 10 bit
3. 16 bit
4. 32 bit B

**1. IoT-A reference model is a \_\_\_\_\_\_\_\_\_**

* Both scalable and secure CORRECT
* Scalable
* Neither scalable nor secure
* Secure

Explanation: IoT-A architectural reference model is a scalable and secure solution intended to guide the design of protocols, interface and algorithms necessary to scale the IoT.

**2. The number of elements in the Open IoT Architecture?**

* 3 elements
* 6 elements
* 8 elements
* 7 elements CORRECT

Explanation: The 7 main elements are : sensor middleware (X-GSN), cloud data storage, scheduler, service delivery and utility manager, request definition, request presentation, configuration and monitoring.

**3. \_\_\_\_\_\_\_\_ enables open application layer for constrained nodes.**

* RFID/NFC
* IEEE 802.15.4.LoWPAN
* IETF 6LoWPAN
* IEFT CoAP CORRECT

Explanation: IETF CoAP - open application layer specification for constrained nodes supporting HTTP and Web integration.

**4. The core element of architecture of smart city is \_\_\_\_\_\_\_\_**

* Management center
* Mobile Unified Service
* Urban Application Platform
* Integrated Information Provider CORRECT

Explanation: An IoT platform, which could serve as a generic architectural foundation for a smart city development has an Integrated Information Provider as its core element.

**5. Adheres to \_\_\_\_\_\_\_\_ approach for managing resources and support mapping to HTTP.**

* IoT
* RESTful CORRECT
* RETful
* Restful

Explanation: CoAP is an application layer protocol (IETF draft) for resource constrained devices. Adheres to RESTful approach for managing resources and support mapping to HTTP.

**6. In order to improve their competitiveness and services assurance, the \_\_\_\_\_\_\_\_ require independently funded IoT projects.**

* eGovermnent related
* Enterprise-based CORRECT
* Business oriented platform
* Company based

Explanation: In order to improve their competitiveness and services assurance, the market oriented enterprises and companies require independently funded IoT projects.

**7. IoT-A stands for \_\_\_\_\_\_\_\_**

* Internet of Things Area
* Internet of Things Architecture CORRECT
* Internet of Things Address
* Industrial of things Architecture

Explanation: The EU's Internet of Things Architecture is another example of the way in which we can solve IoT related challenges.

**8. What is the role of Sensor in smart grid architecture of IoT?**

* Security
* Collect data
* Store data CORRECT
* Manage data

Explanation: Sensors and Actuators are connected, send data when needed, secure and low power, easy to install and configure.

**9. \_\_\_\_\_\_\_\_ tags, devices, smart phones useful in identification.**

* IETF 6LoWPAN
* IEEE 802.15.4.LoWPAN
* IEFT CoAP
* RFID/NFC CORRECT

Explanation: RFID/NFC - tags, devices, smart phones useful in product / object identification and gathering associated information.

**10. IoT data scalability includes \_\_\_\_\_\_\_\_**

* Simple and fast installation
* Protocol abstraction
* Security with hardware
* Data storage CORRECT

Explanation: IoT Data Scalability:  
Data and Event processing at the edge  
Data storage at the edge  
Hierarchical clouds.

**1. How many analog pins are used in Arduino Mega board?**

* 16 CORRECT
* 12
* 8
* 14

Explanation: It has lots of digital input/output pins, 14 can be used as PWM output 16 analog inputs, a USB connection, a power jack, and a reset button.

**2. General purpose memory is called as \_\_\_\_\_\_\_\_**

* ROM memory
* SRAM memory
* EPROM memory
* RAM memory CORRECT

Explanation: The general purpose memory is called as the RAM memory of the 8051 microcontroller, which is divided into 3 areas such as banks, bit-addressable area, and scratch-pad area.

**3. In LPC 2148 we require separate programmer?**

* True
* False CORRECT

Explanation: The UART boot loader eliminates the need of an additional programmer and allows you to program using serial port.

**4. We have no use of having silicon customization?**

* True
* False CORRECT

Explanation: It achieve custom design goals, such as higher clock speed, very low power consumption, instruction set extension, optimization for size, debug support, etc.

**5. What is the address range of SFRs?**

* 80h to ffh CORRECT
* 70h to 80h
* 00h to ffh
* 80h to feh

Explanation: In 8051 there certain registers which uses the RAM addresses from80h to ffh. These are called as Special Function Registers. Some of the SRFrs are I/o ports and control operations as TCON, SCON, PCON.

**6. Function of IE1 in TCON register?**

* External interrupt 1 to be triggered by a falling edge signal
* External interrupt 1 Edge flag. Not related to timer operations CORRECT
* External interrupt 1 Edge flag. Not related to timer operations
* External interrupt 0 single type control bit

Explanation: TCON register has 8 bits. 3rd bit has an IE1 register. This is an external interrupt.

**7. Which IDE is supported by LPC2148 board?**

* AVR Studio 4
* Walldorf
* Code Blocks
* Keil uVersion 4 CORRECT

Explanation: Using Real view compiler the keil uVersion 4 is used. Whereas, AVR studio 4 is used for ATmega128 microcontroller. And code block is used for c programming.

**8. Auxiliary carry is set during which condition?**

* When carry is generated at either D3 to D4 or D7
* When carry is generated from D3 to D4 CORRECT
* When carry is generated from both D3 to D4 and D7
* When carry is generated from D7

Explanation: When carry is generated from D3 to D4, it is set to 1, it is used in BCD arithmetic.

**9. What are the profiles for ARM architecture?**

* A,M
* A,R
* A,R,M CORRECT
* R,M

Explanation: ARMv7 defines 3 architecture "profiles":  
A-profile, Application profile  
R-profile, Real-time profile  
M-profile, Microcontroller profile.

**10. What is the microcontroller used in Arduino UNO?**

* ATmega32114
* ATmega2560
* ATmega328p CORRECT
* AT91SAM3x8E

**1. \_\_\_\_\_\_\_\_\_ is known for its deadbolts and doorknobs.**

* GE connected appliances
* Schlage CORRECT
* Eversense
* Nest

Explanation: Schlage is known for its deadbolts and doorknobs. It is getting ready for IoT era with two lines of smart home locks. It is a bluetooth enabled smart deadbolt that integrates with iOS devices.

**2. Common Public License is re licensed under \_\_\_\_\_\_\_\_**

* Eclipse Public License CORRECT
* Eclipse plug-in
* General Public License
* Eclipse Platform

Explanation: Eclipse was originally released under the Common Public License, but was later re-licensed under the Eclipse Public License. The Free Software Foundation has said licenses are free software licenses, but are incompatible with the GNU GPL.

**3. How many pins does temperature sensor have?**

* 5 legs
* 3 legs CORRECT
* 4 legs
* 2 legs

Explanation: The temperature sensor LM35 have 3 legs, the first leg is Vcc, you can connect this to the 3.3V. The middle leg is Vout, where the temperature is read from.

**4. which sensor is LM35?**

* Temperature sensor CORRECT
* Touch sensor
* Pressure sensor
* Humidity sensor

Explanation: LM35 is a temperature sensor which has 3 legs(Vcc, Vout, GND).

**5. How many and what are the parts that are present in the accelerometer sensor?**

* 2, piezoelectric effect and capacitor sensor CORRECT
* 2, Capacitor sensor, digital Display
* 3, piezoelectric effect, Analog display, digital display
* 1, capacitor sensor

Explanation: The accelerometer consists of many different parts and work in many ways, two of which are piezoelectric effect and the capacitor sensor. The piezoelectric effect is the most common form of accelerometer and uses microscopic crystal structures that become stressed due to accelerative forces.  
The capacitance accelerometer senses changes in capacitance between micro structures located next to the device.

**6. The workbench UI is \_\_\_\_\_\_\_\_**

* Codebase
* GNU
* IDE
* Plug-in CORRECT

Explanation: The workbench UI is contributed by one such plug-in. When you start up the workbench, you are not starting up a single Java program, You are activating a platform runtime.

**7. IBM Software Group began creating a development tool that eventually known as \_\_\_\_\_\_\_\_**

* Android Studio
* Code Blocks
* BlueJ
* Eclipse CORRECT

Explanation: IBM Software Group began creating a development tool that eventually known as Eclipse. We first built a new Java IDE with resources from Object Technology International labs, along with the broader platform to go with it.

**8. Which of the following is the professional kit?**

* A51
* CA51
* PK51 CORRECT
* PK52

Explanation: Keil development tools for the Controller Architecture supports every level of a software developer. And PK51 is a professional kit.

**9. Which sensor measure the pressure relative to atmospheric pressure?**

* Differential pressure sensor
* Vacuum pressure sensor
* Absolute pressure sensor
* Gauge pressure sensor CORRECT

Explanation: This sensor measures the pressure relative to atmospheric pressure. A tire pressure gauge is an example of gauge pressure measurement; when it indicates zero, then the pressure it is measuring is the same as the ambient pressure.

**10. The eclipse platform defines pen architecture.**

* False
* True CORRECT

**1. Two wire interface is also called as \_\_\_\_\_\_\_\_\_**

* SPI
* I2C CORRECT
* USART
* UART

Explanation: The i2c protocol also known as the two wire interface is a simple serial communication protocol that uses just pins of a microcontroller namely SCL and SDA.

**2. What is the sensing range for magnetic proximity sensors?**

* 150mm
* 100mm
* 120mm CORRECT
* 90mm

Explanation: Magnetic proximity sensors have no electrical noise effect and it can work on DC, AC, AC/DC. These types of sensors have highest sensing range upto 120mm.

**3. Which proximity sensors are used in automotive?**

* Ultrasonic Proximity Sensor CORRECT
* Magnetic Proximity Sensor
* Inductive Proximity Sensor
* Capacitive Proximity Sensor

Explanation: They are widely used in automotive such as parking sensors. Ultrasonic Proximity Sensors are used in automotive.

**4. The discrete levels available are\_\_\_\_\_\_\_\_\_**

* Levels CORRECT
* Bytes
* Sides
* Edges

Explanation: The number of discrete values available, or levels, is assumed to be power of two.

**5. \_\_\_\_\_\_\_\_\_ sensors have no electrical noise effect and it can work DC.**

* Magnetic Proximity CORRECT
* Parallel Proximity
* Capacitive Proximity
* Inductive proximity

Explanation: Magnetic proximity sensors have no electrical noise effect and it can work on DC, AC, AC/DC.

**6. What is the protocol used by USART?**

* RS232
* RS485
* RS232C CORRECT
* RS422

Explanation: RS232C is a long established standard ("c" is the current version) that describes the physical interface and protocol for relatively low speed serial data communication between computers and relates devices.

**7. Other name for data conversion is \_\_\_\_\_\_\_\_**

* Wilkinson
* Ramp compare
* Flash ADC CORRECT
* Sigma delta

Explanation: A direct conversion ADC or flash ADC has a bank of comparators sampling the input signal in parallel, each firing for their decoded voltage range.

**8. Resolution is expressed in \_\_\_\_\_\_\_\_\_\_**

* Word
* Nibble
* Bytes
* Bits CORRECT

Explanation: The values are usually stored electronically in binary form, so the resolution is usually expressed in bits.

**9. Which sensor can detect nearby objects?**

* Touch sensor
* Pressure sensor
* Humidity sensor
* Proximity sensor CORRECT

Explanation: A proximity sensor is a sensor able to detect the presence of nearby objects without any physical contact. A proximity sensor often emits an electromagnetic field or a beam of electromagnetic radiation, and looks for a change in the return signal.

**10. HDLC stands for \_\_\_\_\_\_\_\_\_\_\_**

* High level Data Link Coordinator
* High level Data Link Control CORRECT
* High level Data Level Control
* High level Data Link Commutator

**1. ICMP stands for \_\_\_\_\_\_\_\_\_\_**

* Interconnect Coordinate Message Protocol
* Internet Coordinate Message Protocol
* Interconnect Control Message Protocol
* Internet Control Message Protocol CORRECT

Explanation: The Internet Protocol is the key network layer protocol that implements the TCP/IP Protocol suites. Since IP is the protocol that provides the mechanism for delivering datagrams, between devices, it is designed to be relatively basic, and to function with few "bell and whistles".

**2. XMPP creates \_\_\_\_\_\_\_\_\_ identity.**

* email
* device CORRECT
* message
* data

Explanation: XMPP creates a device identity also called a Jabber ID. In MQTT, identities are created and managed separately in broker implementations.

**3. Does HTTP has pipelining.**

* False
* True CORRECT

Explanation: HTTP pipelining further reduces lag time, allowing clients to send multiple request before waiting for each response.

**4. IRC stands for \_\_\_\_\_\_\_\_\_\_**

* Interconnection Relay Chat
* Internet Reduce Chat
* Internet Relay Chat CORRECT
* Interconnect Reduce Chat

Explanation: The XMPP extension for multi user chat can be seen a competitor to Internet Relay Chat, although IRC is far simpler, has far fewer features, and is far widely used.

**5. What is the RAM and ROM size in CoAP?**

* 10 KiB of RAM and 250 KiB of ROM
* 250 KiB of RAM and 10 KiB of ROM
* 10 KiB of RAM and 100 KiB of ROM CORRECT
* 100 KiB of RAM and 10 KiB of ROM

Explanation: The Internet of Things will need billions of nodes, many of which will need to be inexpensive. CoAP has been designed to work on microcontrollers with as low as 10 KiB of RAM and 100 KiB of ROM (code space).

**6. Which is an open standard?**

* HTTP
* XMPP
* MQTT CORRECT
* CoAP

Explanation: IoT needs standard protocols. Two of the most promising for small devices are MQTT and CoAP. Both ate standard protocols.

**7. HTTP allows which response?**

* Coherent
* Serial
* Multiplexing CORRECT
* Binary

Explanation: HTTP allows multiplexing responses: that is sending responses in parallel. This fixes the "head-of-line blocking" problem of HTTP where only one request can be outstanding on a TCP/IP connection at a time.

**8. Does XMPP have text based communication.**

* False CORRECT
* True

Explanation: Since XML is text based, normal XMPP has a higher network overhead compared to purely binary solution. This issue is being addressed by the experimental XEP -0322.

**9. Secure digital card application uses which protocol?**

* USART
* I2C
* SPI CORRECT
* UART

Explanation: The typical applications of SPI protocol are secure digital cards and liquid crystal displays.

**10. Network layer protocol exits in \_\_\_\_\_\_\_\_\_**

* Switches
* Bridges
* Host CORRECT
* Packets

**1. To check whether the command line utility can establish proper communication the command is \_\_\_\_\_\_\_\_\_**

* iotkit - admin test
* admin - iotkit test
* iotkit-admin test CORRECT
* admin-iotkit test

Explanation: First, we will check whether the iotkit-admin command line utility can establish proper communication with Intel IoT Analytics. We just need to run the following command in the SSH terminal:  
Iotkit-admin test.

**2. The best example for interoperability at the application layer is?**

* Net
* File
* Web CORRECT
* Data

Explanation: The best example of interoperability at the application layer is web. The web made the internet successful by creating an open, simple and highly interoperabe layer where data can be exchanged between servers and consumed by applications.

**3. Do new device ID should be a globally unique identifier.**

* False
* True CORRECT

Explanation: The following command to change the device ID to a different one:iotkit-admin set-device-id new-device-id. We just need to replace new-device-id with new device id you want to set up for your devices. However, bear in mind the new device ID must be a globally unique identifier.

**4. Gateway software should be smart enough to handle \_\_\_\_\_\_\_\_\_\_\_**

* Sensors
* Message
* GPS
* Logging CORRECT

Explanation: Gateway software should be smart enough to handle system logging. It has to find the right balance between the number of log entries d=stored on the device and those sent to the data centre.

**5. Central software management server communicates with the gateway devices in which approach?**

* Server limited Bootstrap CORRECT
* Client Initiated Bootstrap
* Factory Bootstrap
* Bootstrap

Explanation: In server initiated bootstrap, the central software management server communicates with the gateway device and deploys the proper version of the software to it.

**6. Congestion control can control traffic entry into a telecommunications network, so to avoid \_\_\_\_\_\_\_\_\_**

* Congestive connection
* Congestive collapse CORRECT
* Connection collapse
* Collapse congestive

Explanation: Congestion control can control traffic entry into a telecommunications network, so to avoid Congestive collapse by attempting to avoid oversubscription of any of the processing or link capabilities of the intermediate nodes.

**7. What IoT collects?**

* Machine generated data CORRECT
* Human generated data
* Device data
* Sensor data

Explanation: IoT is aggregating and compressing massive amounts of low latency/ low duration/high volume machine generated data coming from a wide variety of sensor to support real time use cases such as operational.

**8. Drawback of Factory Bootstrap?**

* It should have many gateways
* It should not have many gateways CORRECT
* It should not have many devices
* Complex circuit can't be handled

Explanation: In the factory bootstrap approach, it doesn't scale well if your solution include a large number of the gates.

**9. VLSM stands for \_\_\_\_\_\_\_\_**

* Variable Length Surface Masking
* Version Length Subnet Masking
* Variable Length Subnet Masking CORRECT
* Version Length Surface Masking

Explanation: The class system of the address space was replaced with Classless Inter - Domain Routing in 1993. CIDR is based on variable length Subnet Masking to allow allocation and routing based on arbitrary length prefixes.

**10. Reoccurring problems can be achieved using \_\_\_\_\_\_\_\_\_\_**

* Patterns CORRECT
* Telnet
* BOOTP
* DNS

Explanation: There are commonly reoccurring problems that occur in the design and implementation of communication protocol and can be addressed by patterns from several different pattern languages: Pattern Language for Application Level Communication Protocol etc.

**1. The processing of publishing data is called as \_\_\_\_\_\_\_\_\_\_**

* Dweeting CORRECT
* Dweepy
* Yocto
* Thing

Explanation: Once we have chosen a unique for one thing, we can start publishing data, a process known as Dweeting.

**2. Fog computing works with cloud computing.**

* True CORRECT
* False

Explanation: Fog computing works with cloud computing, so the long term history of building operational telemetry and control actions can be aggregated and uploaded to the cloud.

**3. DEVICE\_Init performs what?**

* Disabling watchdog timer and enabling APB clock CORRECT
* Enabling APB clock and enabling watchdog timer
* Disabling APB clock and enabling watchdog timer
* Disabling watchdog timer and disabling APB clock

Explanation: The DEVICE\_Init routine performs the following functions:  
--> Disables the watchdog timer and enables the APB clock  
--> Determines the amount of Flash and RAM in the device  
--> Check all internal and external automatic trigger sources.

**4. Does bootstrap 4 supports Sass and flexbox.**

* False
* True CORRECT

Explanation: The version 4.0 alpha release added Sass and flexbox support.

**5. Which application feature is a world of warcraft gadget?**

* Dashzen CORRECT
* Klipfolio
* Ducksboard
* Leftronic

Explanation: Dashzen contains many gadgets. One unique feature of Dashzen is that world of Warcraft Gadget.

**6. MQTT is \_\_\_\_\_\_\_\_\_ protocol.**

* Machine to Machine
* Machine Things
* Machine to Machine and Internet of Things CORRECT
* Internet of Things

Explanation: The MQTT protocol is a machine to machine and Internet of thing connectivity protocol.

**7. \_\_\_\_\_\_\_\_\_ allows us to control electronic components.**

* RESTful API CORRECT
* MQTT
* HTTP
* CoAP API

Explanation: RESTful API that allows us to control electronic components connected to our Intel Galileo Gen 2 board through HTTP requests.

**8. Bootstrap uses what?**

* Pager component
* Root ems CORRECT
* Less
* Pixels

Explanation: Bootstrap 4 is almost rewritten from Bootstrap 3. Changes include:  
Switched from Less to Sass  
Switched from pixel to root ems.

**9. Which computing can be heavy weight and dense form of computing power?**

* Mobile Cloud computing
* Mist computing
* Fog computing
* Cloud computing CORRECT

Explanation: Cloud computing is the practice of using a network of remote servers hosted on the Internet of store, manage, and process data, rather than a local server or a personal computer. Cloud computing can be heavyweight and dense form of computing power.

**10. \_\_\_\_\_\_\_\_\_\_ is used instead of less for stylesheets.**

* Grid layout
* Hackathon
* Flexbox
* Sass CORRECT

Explanation: Sass s used instead of less for the stylesheets. Each Bootstrap component consists of an HTML structure, CSS declaration, and in some cases accompanying JavaScript code.

**1. EPP approach favours \_\_\_\_\_\_\_\_\_ data into the device.**

* UnLocking
* Locking CORRECT
* Blocking
* Unblocking

Explanation: For data protection, End Point Protection approach favour locking data into the device through full disk encryption port control, auditing and restriction of data prior to release from the device and other similar mechanisms.

**2. \_\_\_\_\_\_\_\_ Will reduces the cost of the devices.**

* Voice telephony
* Voice recognition
* Intuitive
* Voice Integration CORRECT

Explanation: Voice Integration could potentially challenge the need for a touch screen on many devices, as it reduces the cost for devices that will be dormant for majority of the time.

**3. Offloading decision depends upon \_\_\_\_\_\_\_\_\_\_ to be offloaded.**

* Critical value
* Threshold value
* Size of application CORRECT
* Dynamic value

Explanation: Offloading decision depends upon the size of application to be offloaded. It saves energy for a code compilation, if size of the code is large.

**4. \_\_\_\_\_\_\_\_\_ is concerned with management of mobile.**

* Cloud Privacy Protection
* Mobile Device Management CORRECT
* Cloud
* Endpoint Protection

Explanation: Mobile Device Management is primarily concerned with management of mobile devices. Solution often consists of configuration, network, and services management on mobile devices.

**5. \_\_\_\_\_\_\_\_\_\_ is the minimum value which an application shall exceed to be offloaded.**

* Critical value
* Threshold value CORRECT
* Dynamic value
* Static value

Explanation: Threshold value is the minimum value which an application shall exceed to be offloaded. The threshold value can be measured in terms of processing time, energy consumption and memory usage.

**6. What do we call string in python 2?**

* Unicode CORRECT
* Str
* Strs
* Unicades

Explanation: In python 2 the text string is called as str, and in python 2 it is called as unicode.

**7. WiFi uses how much frequency?**

* 3GHz
* 2.4GHz CORRECT
* 3.5GHz
* 2.2GHz

Explanation: WiFi is a local wireless technology that uses 2.4GHz ultra high frequency or 5 GHz super high frequency radio waves.

**8. \_\_\_\_\_\_\_\_\_ process has to support the definition of application topologies in various formats.**

* Management and Configuration
* Support of different Migration types
* Top-down and bottom-up
* Enrichment of Topology specification CORRECT

Explanation: Enrichment of Topology specification process has to support the definition of application topologies in various formats such as TOSCA or Blueprints and must consider non-functional aspects specified as extension of the previous formats.

**9. \_\_\_\_\_\_\_\_\_ Specifies the function that will be called when a successful connection with the PubNub cloud.**

* Callback
* Reconnect
* Connect CORRECT
* Error

Explanation: The call to this message specifies many methods declared in the MessageChannel class  
Connect: specifies the function that will be called when a successful connection with the PubNub cloud.

**10. \_\_\_\_\_\_\_\_\_ is particularly appealing when the human's hands or eye are otherwise occupied.**

* Voice recognition CORRECT
* Sound recognition
* Frequency recognition
* Amplitude recognition

Explanation: Voice recognition is particularly appealing when the human's hands or eye are otherwise occupied. For example, it may not only convenient but also a legal requirement to use verbal commands.

**1. Bluetooth will drain battery life.**

* True CORRECT
* False

Explanation: Even with limited range, early Bluetooth implementations were a big drain on battery life.

**2. HelloWeb is an example of \_\_\_\_\_\_\_\_\_\_\_\_ server.**

* SMTP
* HTTP CORRECT
* CoAP
* MQTP

Explanation: HelloWeb is an example of an HTTP server, but it does not use any sensors or actuators.

**3. Thread would be able to support \_\_\_\_\_\_\_\_\_\_ devices.**

* 256 Devices
* 300 Devices
* 125 Devices
* 250 Devices CORRECT

Explanation: Based on the current specification, thread would be able to support a network of up to 250 devices. Every house could be its own network, meaning your home could have up to 250 integrated devices interacting with you on a daily basis.

**4. \_\_\_\_\_\_\_\_\_ service retrieves the description of the registered service.**

* Service updated resources
* Update
* Get available services
* Get service CORRECT

Explanation: Get service retrieves the description of the registered service, that is, the SPARQL description in the case of the OpenIoT open source implementation.

**5. A resource with measured variable will reflect \_\_\_\_\_\_\_\_**

* Potential phenomenon
* Measured phenomenon
* Physical phenomenon CORRECT
* Resource phenomenon

Explanation: A resource with measured variable will reflect a physical phenomenon as it currently is. The resource is updated with new sensor values from time to time.

**6. Enabled customization endpoint will be enabled only during \_\_\_\_\_\_\_\_\_\_**

* True cases only CORRECT
* True and false cases
* Either True or false cases
* False cases only

Explanation: Each endpoint can be customized with properties using the following format: endpoint.[endpoint name].[property to customize].  
Enabled - if true then it can be accessed otherwise not.

**7. Global scheduler keeps the track of and control the life cycle of IoT services.**

* False
* True CORRECT

Explanation: Global scheduler keeps the track of and control the life cycle of IoT services. In particular, the lifecycle management services are supported by the scheduler.

**8. For which service the resources allocated for the services are released?**

* Register
* Unregister CORRECT
* Suspend
* Resource Discovery

Explanation: In the scope of the unregister functionality for a given IoT service, the resources allocated for the services are released.

**9. \_\_\_\_\_\_\_\_\_\_ is the brainchild of ARM.**

* WiFi
* Bluetooth
* Zigbee
* Thread CORRECT

Explanation: The brainchild of an alliance between Nest, Samsung, ARM and a few other companies is Thread. Thread aims to anticipate the needs of the Internet pf Things.

**10. Authors proposed 4 layer model named \_\_\_\_\_\_\_\_\_\_**

* Health-care
* Business-care
* K-Businesscare
* K-Healthcare CORRECT

Explanation: Authors proposed a four layer model named "k-Healthcare" which is considered a comprehensive platform for accessing patient's health data using the smartphones and applications.

**1. \_\_\_\_\_\_\_\_ in IoT as one of the key characteristics, devices have different hardware platforms and networks.**

* Sensors
* Connectivity
* Security
* Heterogeneity CORRECT

Explanation: Heterogeneity in IoT as one of the key characteristics, devices have different hardware platforms and networks. And can interact with other devices or services platforms through different networks.

**2. The toy includes \_\_\_\_\_\_\_\_**

* Microphone
* Speaker
* Microphone, camera, and speaker CORRECT
* Camera

Explanation: The toys, which include microphones, cameras, speakers and motors, have some people pointing at teddy, the super computer toy.

**3. Perception and attention are intrinsically rhythmic in nature.**

* True CORRECT
* False

Explanation: According to the study conducted by researchers from the university of Sydney and Italian universities, Perception and attention are intrinsically rhythmic in nature.

**4. RFID stands for \_\_\_\_\_\_\_\_**

* Radio Frequency Industry
* Random Frequency Identification
* Radio Flow Industry
* Radio Frequency Identification CORRECT

Explanation: In the early years of IoT, RFID (Radio Frequency Identification) and sensor technologies were the focus. The concept has grown enormously during the last decade.

**5. Informed \_\_\_\_\_\_\_\_\_ will enable machines to take autonomous action.**

* Processes
* Infrastructure
* Product CORRECT
* People

Explanation: Advanced sensors, controls, and software applications work together to obtain and share real time information as finished goods make their way down the production line. Informed product will enable machines to take autonomous action.

**6. \_\_\_\_\_\_\_\_ Provide the means to create capability that reflects true awareness of the physical world and people.**

* Heterogeneity
* Sensors CORRECT
* Connectivity
* Security

Explanation: Sensing technologies provide the means to create capability that reflects true awareness of the physical world and people in it. The sensing information is simply the analogue input from the physical world.

**7. Which possibility is the highest contributor to cost overhead for manufacturing facilities?**

* Transportation and logistics
* Plant control flow operation
* Energy management and resource optimization CORRECT
* Energy and utilities

Explanation: Energy management and resource optimization: Energy is among the highest contributor to cost overhead for manufacturing facilities.

**8. Is our technology out of sync.**

* False
* True CORRECT

Explanation: Today's technology can sometimes feel like it's out of sync with our senses as we peer at small screens, flick and pinch fingers across smooth surfaces, and read tweets "written" by programmer created bots.

**9. IAD stands for \_\_\_\_\_\_\_\_**

* Informative Assist Device
* Industrial Assist Device
* International Assist Device
* Intelligent Assist Device CORRECT

Explanation: The general motors team used the term Intelligent Assist Device as an alternative to cobot, especially in the context of industrial material handling and automotive assembly operations.

**10. The most likely culprit is \_\_\_\_\_\_\_\_**

* Things
* Network
* Device
* Internet connectivity CORRECT

Explanation: The most likely culprit is internet connectivity, leaving end users unable to access their hosted data or even perform management functions.

**1. Intel Galileo has the main feature of?**

* Support for openCV
* Intel Quart CORRECT
* Onboard real time clock
* Support PCI Express

Explanation: Intel Galileo features the Intel quart SoC X1000, the first product from the Intel Quart technology family of low power, small-core products. Intel Quart represents Intel's attempt to compete within markets such as the Internet of Things and Wearable Computing.

**2. What is the example for smart grid edge device for utility?**

* Smart Home
* Smart Car
* Smart Collage
* Smart Meters CORRECT

Explanation: Examples of Smart Grid Edge Devices for Utilities:  
Voltage and Current sensors  
Smart Inverters  
Smart Motors.

**3. Periferal Component Interconnect (PCI) Express interconnects which modules?**

* WIfi, Bluetooth, GSM cards CORRECT
* **Micro SD card**wrong
* Serial communication
* Real Time Clock

Explanation: PCI is a high speed serial computer expansion bus standard. It includes higher maximum system bus throughput, lower I/O pin count and smaller physical footprint.

**4. The IoT platforms are mainly divided into how many types**

* 3 types
* **5 types**wrong
* 4 types CORRECT
* 2 types

Explanation: The IoT platforms could be divided into four types:  
eGovermnent related  
Enterprise-based  
Company based  
Business oriented platform.

**5. API enables services portability between \_\_\_\_\_\_\_\_\_\_\_\_**

* Services
* Systems CORRECT
* Devices
* Networks

Explanation: API enables services portability between sysyems, I.e., service may be allocated to end-systems or servers, with possible relocation and replication throughout its lifecycle.

**6. Which blocks deals with performance issues?**

* SOA supervisor CORRECT
* ESB(Enterprise Service Bus)
* Service Broker
* SOA registry

Explanation: SOA supervisor is a traffic cop ensuring do not having issues. It deals with performance issues of the system so that appropriate service levels are met. If any of the services have performance problems it sends messages to the proper infrastructure to fix the issue.

**7. Galileo Gen 2 board was developed by which company?**

* Atmel
* Intel CORRECT
* Dallas
* Motorola

Explanation: Intel Galileo is the first in the line of boards based on intelx86 architecture and is designed for education communities.

**8. \_\_\_\_\_\_\_\_ resources are identified by Uniform Resource Identifiers.**

* CoAP CORRECT
* TCP/IP
* HMTP
* MQTT

Explanation: CoAP is an application layer protocol (IETF draft) for resource constrained devices. Adheres to Restful approach for managing resources and support mapping to HTTP. CoAP resources are identified by Uniform Resource Identifiers.

**9. ITS stands for \_\_\_\_\_\_\_\_\_**

* Internet Transportation Security
* Internet Travel Services
* Intelligent Transportation Services CORRECT
* Intelligent Transportation Security

Explanation: The center is linked with set of services, intelligent transportation services city fire protection and security; corporation medical services; commercial and tourism services; and tax and fees payment services.

**10. In \_\_\_\_\_\_\_\_ layer, various application platforms are built as required by the services needs of smart grid.**

* Smart Application layer CORRECT
* Smart network layer
* Perception layer
* Data layer

Explanation: In the smart application layer, various application platforms are built as required by the services needs of smart grid. The application platform as required by the services needs of smart grid.

**1. What is the operation for mode 0?**

* 8-bit auto reload mode, 8-bit auto reload time/counter; THx holds a value which is to be reloaded into TLx each time it overflows
* 16-bit timer mode, 16-bit timer/counter THx and TLx are cascaded, no prescalar
* 13-bit timer mode, 8-bit timer/counter THx and TLx as 5-bit prescalar CORRECT
* Spilt timer mode

Explanation: Mode 0 is exactly same like mode 1 except that it is a 13-bit timer instead of 16-bit. The 13-bit counter can hold values between 0000 to 1FFH in Th-Tl.

**2. The ARM7TDMI-S processor has \_\_\_\_\_\_\_\_\_\_ types of memory cycle.**

* 5
* 4 CORRECT
* 2
* 3

Explanation: The ARM7TDMI-S processor has 4 types of memory cycle: Non sequential cycle, Sequential cycle, cp processor register transfer cycle, internal cycle.

**3. What are t, d, m, I stands for in ARM7TDMI?**

* Thumb, Debug, Multiplier, ICE
* Timer, Debug, Modulation, IS
* Thumb, Debug, Multiplier, ICE CORRECT
* Timer, Debug, Multiplex, ICE

Explanation: The ARM7TDMI(ARM7 + 16 bit Thumb + JTAG Debug + fast Multiplier + enhanced ICE) processor implements the ARM4 instruction set.

**4. What is the instruction set used by ARM7?**

* 64-bit instruction set
* 16-bit instruction set CORRECT
* 8-bit instruction set
* 32-bit instruction set

Explanation: ARM introduced the Thumb 16-bit instruction set providing improved code density compared to previous designs. The most widely used ARM7 designs implement the ARMv4T architecture, but some implement ARM3 or ARMv5TEJ.

**5. What is the address range of SFRs?**

* 70h to 80h
* 00h to ffh
* 80h to feh
* 80h to ffh CORRECT

Explanation: In 8051 there certain registers which uses the RAM addresses from80h to ffh. These are called as Special Function Registers. Some of the SRFrs are I/o ports and control operations as TCON, SCON, PCON.

**6. LPC 2148 pro development board has \_\_\_\_\_\_\_\_\_ on chip memory.**

* 500k
* 425k
* 625k
* 512k CORRECT

Explanation: LPC 2148 Pro Development Board is a powerful development platform based on LPC2148 ARM7TDMI micro controller with 512k on-chip memory.

**7. A program written with the IDE for Arduino is called \_\_\_\_\_\_\_\_\_**

* Cryptography
* Source code
* Sketch CORRECT
* IDE source

Explanation: Sketches are saved on the development computer as text files with the file extension .ino. Arduino software (IDE) pre-1.0 saved sketches with the extension file .pde.

**8. How many digital pins are there on the UNO board?**

* 20
* 16
* 14 CORRECT
* 12

Explanation: It has 14 digital pins input/output pins of which 6 can be used as PWM output, 6 analog inputs, a USB connection, a power jack, a reset button and more.

**9. External Access is used to permit \_\_\_\_\_\_\_\_\_\_\_\_**

* Power supply
* Memory interfacing CORRECT
* ALE
* Peripherals

Explanation: External Access input is employed to permit or prohibit outer memory interfacing. If there is no outer memory needed, this pin is dragged by linking it to Vcc.

**10. How many processors are used in the Instruction pipelining?**

* One CORRECT
* Three
* Two
* Four

Explanation: Pipelining is a technique for implementing instruction level parallelism within a single processor. Pipelining attempts to keep every part of the processor busy with some instructions, by dividing incoming instructions into the series of sequential steps.

**1. Monnit temperature sensor is used for what?**

* Temperature sensor
* Accurate results CORRECT
* Pressure sensor
* To measure the temperature at high degree

Explanation: Monnit wireless temperature sensor use a thermistor to accurately measure temperature. These sensors are perfect for monitoring ambient temperatures around the sensors physical location.

**2. \_\_\_\_\_\_\_\_ sensor is used for tracking rotation or twist.**

* Gyroscope CORRECT
* Proximity
* Pressure
* Temperature

Explanation: Accelerometers in mobile phones are used to detect the orientation of the phone. The gyroscope adds an additional dimension to the information supplied by the accelerometer by tracking rotation or twist.

**3. The workbench UI is \_\_\_\_\_\_\_\_**

* Plug-in CORRECT
* GNU
* IDE
* Codebase

Explanation: The workbench UI is contributed by one such plug-in. When you start up the workbench, you are not starting up a single Java program, You are activating a platform runtime.

**4. Which of the following is the Compiler kit?**

* A51
* PK51 CORRECT
* CA51
* A52

Explanation: Keil development tools for the Controller Architecture supports every level of a software developer. And PK51 is a Compiler Kit.

**5. How many and what are the parts that are present in the accelerometer sensor?**

* 2, piezoelectric effect and capacitor sensor CORRECT
* 1, capacitor sensor
* 2, Capacitor sensor, digital Display
* 3, piezoelectric effect, Analog display, digital display

Explanation: The accelerometer consists of many different parts and work in many ways, two of which are piezoelectric effect and the capacitor sensor. The piezoelectric effect is the most common form of accelerometer and uses microscopic crystal structures that become stressed due to accelerative forces.  
The capacitance accelerometer senses changes in capacitance between micro structures located next to the device.

**6. \_\_\_\_\_\_\_ is the best for Internet connected thermostat.**

* Eversense
* Honeywell
* GE connected appliances
* Nest CORRECT

Explanation: Nest is the best for Internet connected thermostat, but it also makes smoke and carbon monoxide detectors and cameras. Its products also integrates with IoT home automation products d=from a variety of other vendors.

**7. Vibrant ecosystem of third parties would be critical for achieving broad adoption of an eclipse.**

* True CORRECT
* False

Explanation: Vibrant ecosystem of third parties would be critical for achieving broad adoption of an eclipse. But business partners were initially reluctant to invest in our platforms.

**8. Electric motor protection has which sensor?**

* Touch sensor
* Pressure sensor
* Humidity sensor
* Temperature sensor CORRECT

Explanation: Electric motor protection has a temperature sensor in it to verify the temperature which is exceeding its limits or not.

**9. Which axis accelerometer is mostly used in IOT?**

* 3- axis CORRECT
* Combination of all
* 2- axis
* 1- axis

Explanation: It uses 3-axis accelerometer. It detect orientation, shake, tap, double tap, fall, tilt, motion, positioning, shock or vibration.

**10. \_\_\_\_\_\_\_ is a complete line of home IoT devices that includes smart switches.**

* Cinder
* Belkin's WeMo CORRECT
* Canary
* Awair

Explanation: Belkin's WeMo is a complete line of home IoT devices that includes smart switches, cameras, lights, an air purifier and more. It allows the end user to control a lot of different devices with one smartphone app.

**1. What is WD1402A?**

* I2C
* USART
* SPI
* SPIUART CORRECT

Explanation: WD1402A is the first single chip UART on general sale. Introduced about 1971. Compatible chip included the Fairchild TR1402A and the general instruments AY-5-1013.

**2. The rate of new values is called the sampling rate or sampling frequency.**

* True CORRECT
* False

Explanation: The analog signal is continuous I time and it is necessary to convert this to a flow of digital values. It is therefore required to define the rate at which new digital values are sampled from the analog signal. The rate of new values is called the sampling rate or sampling frequency of the converter.

**3. Perfect resolution is possible when?**

* sampling rate less than twice the bandwidth of the signal
* sampling rate greater than thrice the bandwidth of the signal
* sampling rate less than thrice the bandwidth of the signal
* sampling rate greater than twice the bandwidth of the signal CORRECT

Explanation: If an ADC operates at the sampling rate greater than twice the bandwidth of the signal, then perfect reconstruction is possible given an ideal ADC and neglecting quantization error.

**4. Which proximity sensor detects positioning of an object?**

* Optical Proximity Sensor CORRECT
* Inductive Proximity Sensor
* Capacitive Proximity Sensor
* Magnetic Proximity Sensor

Explanation: They recognize, for non-contact and precisely, the positioning of the object.

**5. HDLC stands for \_\_\_\_\_\_\_\_\_\_\_**

* High level Data Link Coordinator
* High level Data Link Commutator
* High level Data Link Control CORRECT
* High level Data Level Control

Explanation: ISO standard high level data link control synchronous link layer protocols, which were with synchronous voice frequency modems.

**6. Other name for tactile sensor is\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* Pressure sensor
* Humidity sensor
* Temperature sensor
* Touch sensor CORRECT

Explanation: Touch sensors are also called as tactile sensor and are sensitive to touch, force or pressure. These are one of the simplest and useful sensors.

**7. Which error occurs when the designated start and stop bits are not found?**

* Underrun error
* Break condition
* Overrun error
* Framing error CORRECT

Explanation: A framing error occurs when the designated start and stop bits are not found. If the data line is not in the expected state when the stop bit is expected, a framing error will occur.

**8. Does proximity sensor have a temperature sensor in it?**

* False
* True CORRECT

Explanation: A buit-in temperature sensor is used by the signal processing circuitry to provide stable outputs across the temperature range -40 oC to +85oC.

**9. Which proximity sensors are used in automotive?**

* Magnetic Proximity Sensor
* Inductive Proximity Sensor
* Capacitive Proximity Sensor
* Ultrasonic Proximity Sensor CORRECT

Explanation: They are widely used in automotive such as parking sensors. Ultrasonic Proximity Sensors are used in automotive.

**10. How many common ways are there for implementing an ADC?**

* 5 ways
* 10 ways CORRECT
* 2 ways
* 8 ways

Explanation: The most common ways for implementing ADC are direct conversion, successive approximation, ramp compare, Wilkinson, integrating, delta encoded, pipelined, sigma delta, time interleaved, intermediate FM stage, other types.

**1. Full form of MQTT \_\_\_\_\_**

* Message Queuing Telegram Transport
* Message Queue Telemetry Transport
* Message Queue Telegram Transport
* Message Queuing Telemetry Transport CORRECT

Explanation: MQTT (Message Queuing Telemetry Transport) is a lightweight messaging protocol that provides resource-constrained network clients with a simple way to distribute telemetry information.

**2. All operating modes work under \_\_\_\_\_\_\_\_\_\_\_\_**

* 15 kbit/s
* 100 kbit/s CORRECT
* 150 kbit/s
* 11 kbit/s

Explanation: There are several operating modes for I2C communication. All are compatible in that the 100 kbit/s standard mode is always used.

**3. RIP stands for \_\_\_\_\_\_\_\_**

* Reduced Information Protocol
* Routing Information Protocol CORRECT
* Reduced Internet Protocol
* Routing Internet Protocol

Explanation: The Routing Information Protocol is one of the oldest distance vector routing protocols which employ the hop count as a routing metric.

**4. CoAP is a specialized \_\_\_\_\_\_\_\_\_ protocol.**

* Web Transfer CORRECT
* Resource
* Power
* Application

Explanation: The CoAP is a specialized web transfer protocol for use with constrained nodes and constrained networks.

**5. CoAP is specialized in \_\_\_\_\_\_\_\_\_\_\_**

* Device applications
* Wireless applications
* Wired applications
* Internet applications CORRECT

Explanation: Constrained Application Protocol (CoAP) is a specialized Internet Application Protocol for constrained devices, as defined in RFC 7228.

**6. Which protocol has a quality of service?**

* HTTP
* XMPP CORRECT
* MQTT
* CoAP

Explanation: MQTT has different levels of quality of services. This flexibility is not available in XMPP.

**7. What does HTTP do?**

* Reduces perception of latency and allows multiple concurrency exchange
* Enables network resources and reduces perception of latency
* Enables network resources and reduces perception of latency and Allows multiple concurrent exchange CORRECT
* Allows multiple concurrent exchange and enables network resources

Explanation: It enables more efficient use of network resources and a reduced perception of latency by introducing header field compression and allowing multiple concurrent exchanges on the same connection.

**8. How many messages will HQTTP will send in 1024?**

* All
* 256
* 240 CORRECT
* 514

Explanation: It is less reliable, only 240(3G)/524(WiFi) messages were received out of total of 1024 messages.

**9. MQTT is mainly used for \_\_\_\_\_\_\_\_\_\_**

* Internet communication
* Device communication
* Wireless communication
* M2M communication CORRECT

Explanation: MQTT is a public messaging protocol designed for lightweight M2M communication. It was originally developed by IBM and is now an open standard.

**10. MQTT is \_\_\_\_\_\_\_\_\_ oriented.**

* Data
* Message CORRECT
* Device
* Network

Explanation: MQTT is message oriented. Every message is a discrete chunk of data, opaque to the broker  
MQTT is message oriented. Every message is a discrete chunk of data, opaque to the broker.

**1. ARQ stands for \_\_\_\_\_\_\_\_\_\_**

* Automatic Request Repeat
* Application Repeat Request
* Application Request Repeat
* Automatic Repeat Request CORRECT

Explanation: TCP, not UDP, provide end to end communication, i.e. error recovery by means of error detecting code and automatic repeat request protocol. The ARQ protocol also provides flow control, which may be combined with congestion avoidance.

**2. What will Security provide?**

* Secure remote management
* Product life span increases
* Long term security CORRECT
* Saves time and cost

Explanation: Connectivity, manageability, and security are core IoT building blocks, essential for reducing device manufactures, time-to-market, complexity, and risk. Wind River Intelligent Devices has security benefit which are designed for IoT software development to protect critical data throughout the device lifecycle.

**3. How many protocols are used in the application layer?**

* 15
* 10
* More than 10
* More than 15 CORRECT

Explanation: More than 15 protocols are used in the application layer, including file transfer protocol, Telnet, Trivial File Transfer Protocol and simple network Management Protocol.

**4. What translates IP address into MAC address?**

* Organizationally Unique Identifier
* Burned In Address
* Address Resolution Protocol
* Network Interface Card CORRECT

Explanation: A MAC address is given to an adapter when it is manufactured. It is hardwired or hard-coded onto your computer's NIC and it is unique to it. Something called the ARP (Address Resolution Protocol) translates an IP address into MAC address.

**5. Which requires data stream management?**

* Device data
* Bigdata
* IoT CORRECT
* Bigdata & IoT

Explanation: In order for one to claim that they can deliver IoT analytic solutions requires big data, but IoT analytics must also include: Stream data management and Edge analytics.

**6. VLSM stands for \_\_\_\_\_\_\_\_**

* Variable Length Surface Masking
* Version Length Surface Masking
* Version Length Subnet Masking
* Variable Length Subnet Masking CORRECT

Explanation: The class system of the address space was replaced with Classless Inter - Domain Routing in 1993. CIDR is based on variable length Subnet Masking to allow allocation and routing based on arbitrary length prefixes.

**7. FCP stands for \_\_\_\_\_\_\_\_\_**

* Fast Channel Protocol
* Fiber Channel Protocol CORRECT
* Field Channel Protocol
* Fiber Carrying Protocol

Explanation: Fiber Channel Protocol is the SCSI interface protocol utilizing an underlying Fiber channel connection.

**8. Application layer interacts directly with the \_\_\_\_\_\_\_\_**

* sensors
* end user CORRECT
* front user
* wired link

Explanation: In perception layer sensor networks are deployed on various locations. Network layer contains Wireless or wired link. while application layer interacts directly with the end user.

**9. Which tier is data lake enabled core analytics platform?**

* 1-Tier Analytics
* 4-Tier Analytics
* 3-Tier Analytics CORRECT
* 2-Tier Analytics

Explanation: Tier-3 is the data lake enabled core analytics platform. The tier 3 core analytics platform includes analytics engines, data sets and data management services that enable access to the data.

**10. The agent running as a \_\_\_\_\_\_\_\_\_ on a device.**

* Daemon CORRECT
* SSH Terminal
* Local agent
* Yocto Linux

Explanation: Unless we have made specific changes to the Yocto Linux meta distribution to disable specific component, we will have the agent running as a daemon on the device.

**1. DEVICE\_Restore routine restores all the device registers modified by DEVICE\_Init to their reset values.**

* False
* True CORRECT

Explanation: DEVICE\_Restore routine restores all the device registers modified by DEVICE\_Init to their reset values. This includes starting the watchdog timer and restoring the APB clock gates back to their reset value.

**2. Which computing can be heavy weight and dense form of computing power?**

* Cloud computing CORRECT
* Mobile Cloud computing
* Mist computing
* Fog computing

Explanation: Cloud computing is the practice of using a network of remote servers hosted on the Internet of store, manage, and process data, rather than a local server or a personal computer. Cloud computing can be heavyweight and dense form of computing power.

**3. Bootstrap is used for \_\_\_\_\_\_\_\_\_\_**

* Web applications CORRECT
* Data
* IoT
* Bigdata

Explanation: Bootstrap is a free and open source front end web framework for designing websites and web applications.

**4. \_\_\_\_\_\_\_\_\_ is used to visualize data collected with the sensor.**

* Dweeting
* Yocto
* freeboard.io CORRECT
* Dweet.io

Explanation: freeboard.io visualize the data collected with the sensor and published to dweet.io in many gauges and make the dashboard available to different computers and devices all over the world.

**5. DEVICE\_Init performs what?**

* Disabling watchdog timer and enabling APB clock CORRECT
* Enabling APB clock and enabling watchdog timer
* Disabling watchdog timer and disabling APB clock
* Disabling APB clock and enabling watchdog timer

Explanation: The DEVICE\_Init routine performs the following functions:  
--> Disables the watchdog timer and enables the APB clock  
--> Determines the amount of Flash and RAM in the device  
--> Check all internal and external automatic trigger sources.

**6. Which bootstrap has twelve column responsive grid layout system?**

* Bootstrap 4
* Bootstrap
* Bootstrap 2 CORRECT
* Bootstrap 3

Explanation: Bootstrap 2 was released, which added a twelve column responsive grid layout system, inbuilt support for Glyphicons, several new components, as well as changes to many of the existing components.

**7. IoT devices use \_\_\_\_\_\_\_ for security.**

* Immutable CORRECT
* Cloud
* Software
* Fognode

Explanation: These devices use a hardware-based immutable root of trust, which can be attested by software agents running throughout the infrastructure.

**8. My chat page allows searching criteria such as \_\_\_\_\_\_\_\_\_**

* Charts
* Associated tags
* Device Name
* Properties CORRECT

Explanation: Charts site will display the My Charts page that will allow you to search for devices using many search criteria, such as the device name, the associated tags, and its properties.

**9. Fog computing addresses security, data encryption.**

* False
* True CORRECT

Explanation: Fog computing addresses security, data encryption and distributed analytics requirements.

**10. \_\_\_\_\_\_\_\_\_\_\_ provides a set of stylesheets that provide basic style definition for HTML components.**

* Flexbox
* Javascript
* Bootstrap CORRECT
* Sass

Explanation: Bootstrap provides a set of stylesheets that provide basic style definition for HTML components. These provide a uniform, modern appearance for formatting text, tables and form elements.

**1. How many arguments are accepted by publish()?**

* 5 arguments
* 1 argument
* 3 arguments
* 2 arguments CORRECT

Explanation: This method accepts two positional arguments: the topic to publish to, and the body of the message.

**2. CPP embraces sharing of data between \_\_\_\_\_\_\_\_\_\_\_\_**

* Users
* Cloud and Devices
* Both devices and users CORRECT
* Devices

Explanation: Cloud privacy protection embraces sharing of data between devices and users. This sharing means that data must transmit through intermediaries and be protected while doing so.

**3. \_\_\_\_\_\_\_\_\_ specifies the function that will be called when there is a new message received from the channel.**

* Reconnect
* Error
* Connect
* Callback CORRECT

Explanation: The call to this message specifies many methods declared in the MessageChannel class  
Callback: specifies the function that will be called when there is a new message received from the channel.

**4. Which command finds out the topic?**

* rostopic bw
* rostopic delay
* rostopic find CORRECT
* rostopic echo

Explanation: Rostopic find, finds topics by type. Rostopic is implemented in python. ROSTOPIC uses YAML\_syntax at the command line

**5. OAD stands for \_\_\_\_\_\_\_\_\_\_\_**

* Orientation Application Development
* Orientational Application Distribution
* Optimal Application Development
* Optimal Application Distribution CORRECT

Explanation: The exponential growth of cloud service offering in the last year has increased the number of alternative for engineering and re-engineering applications to be partially or completely run in a cloud environment.

**6. Mobile cloud computing at its simplest refers to an \_\_\_\_\_\_\_\_\_\_**

* Intervention
* Internet
* Intervention & Internet
* Infrastructure CORRECT

Explanation: Mobile cloud computing at its simplest refers to an infrastructure where both data storage and the data processing happen outside of the mobile devices.

**7. \_\_\_\_\_\_\_\_ error will show if we try to send text string instead of bytes.**

* Compiler error
* Linker error
* Error
* TypeError CORRECT

Explanation: If we send a text string the method will raise TypeError. TypeError will show if we try to send text string instead of bytes.

**8. \_\_\_\_\_\_\_\_\_ is particularly appealing when the human's hands or eye are otherwise occupied.**

* Sound recognition
* Amplitude recognition
* Frequency recognition
* Voice recognition CORRECT

Explanation: Voice recognition is particularly appealing when the human's hands or eye are otherwise occupied. For example, it may not only convenient but also a legal requirement to use verbal commands.

**9. WiFi uses how much frequency?**

* 3GHz
* 2.4GHz CORRECT
* 2.2GHz
* 3.5GHz

Explanation: WiFi is a local wireless technology that uses 2.4GHz ultra high frequency or 5 GHz super high frequency radio waves.

**10. \_\_\_\_\_\_\_\_\_ process has to support the definition of application topologies in various formats.**

* Enrichment of Topology specification CORRECT
* Top-down and bottom-up
* Support of different Migration types
* Management and Configuration

Explanation: Enrichment of Topology specification process has to support the definition of application topologies in various formats such as TOSCA or Blueprints and must consider non-functional aspects specified as extension of the previous formats.

**1. When a client makes a GET request for /voltage/actual, the request is passed to \_\_\_\_\_\_\_\_**

* Measured Variable's HandleRequest CORRECT
* HandleRequest's MeasuredVariable
* MeasuredVariable
* HandleRequest

Explanation: When a client makes a GET request for /voltage/actual, the request is passed to Measured Variable's HandleRequest method. When this happens, the MeasuredVariable object first calls FromSensor.

**2. Which endpoint shows metric information for the current application?**

* /trace
* /metric CORRECT
* /health
* /info

Explanation: Endpoints allow you to monitor the application and, in some cases, interact with it as well. /metric shows metric information for the current application. It is also sensitive by default.

**3. What is the result for HandleGet()?**

* Null CORRECT
* Empty
* Origin
* Zero

Explanation: This method gets the current buffer state, without changing it. The method performs the necessary locking to enable safe of the buffer from multiple threads. The result may be null.

**4. Which endpoint is gathered and publishes information about OS?**

* /health
* /trace
* /metric CORRECT
* /info

Explanation: The metric endpoint is one of the most important endpoint as I gathers and publishes information about OS, JVM and Application level metric.

**5. Health information is collected from all the beans implementing Health Indicator interface.**

* True CORRECT
* False

Explanation: Health information is collected from all the beans implementing Health Indicator interface configured in your application context.

**6. Which category could be used by citizens to contribute to a smart city?**

* Personal IoT
* Group IoT
* Community IoT CORRECT
* Industrial IoT

Explanation: Community IoT where could sourcing applications could be used by citizens to contribute to a smart city.

**7. Enabled customization endpoint will be enabled only during \_\_\_\_\_\_\_\_\_\_**

* True and false cases
* Either True or false cases
* True cases only CORRECT
* False cases only

Explanation: Each endpoint can be customized with properties using the following format: endpoint.[endpoint name].[property to customize].  
Enabled - if true then it can be accessed otherwise not.

**8. What is the popular method of organizing wireless network topologies?**

* Cluster CORRECT
* Network
* Software
* Synchronization

Explanation: Clustering is a popular method of organising wireless network topologies, in which a few nodes, the cluster heads are elected as representing to route the traffic originated in the entire network.

**9. Variable voltage Sensor is an instance of Analog Sensor.**

* True CORRECT
* False

Explanation: For reading the current voltage, library class Analog Sensor that wraps an analog input port in an object that provides the method HandleGet.  
Variable voltage Sensor is an instance of Analog Sensor, initialized with pinA1.

**10. An HTTP server manages \_\_\_\_\_\_\_\_\_\_\_\_**

* Sensors
* Websites
* Resources CORRECT
* Devices

Explanation: An HTTP server manages resources. In this example, a resource is provided that has the meaning, "actual voltage value, as measured by a sensor attached to the board".

**1. AI stands for \_\_\_\_\_\_\_\_\_\_\_\_**

* Ambient Internet
* Ambient Intelligence CORRECT
* Artificial Intelligence
* Application Intelligence

Explanation: It discusses scope of Big Data Analysis, Information Communication Technology and Ambient Intelligence.

**2. The cobots assured human safety by having no internal source of \_\_\_\_\_\_\_\_**

* Industrial material
* Safe equipment
* General motors
* Motive power CORRECT

Explanation: The first cobots assured human safety by having no internal source of motive power. It is a natural agent, used to impact motion to machinery such as engine.

**3. Informed \_\_\_\_\_\_\_\_\_\_ will provide intelligent design, operation as well as safety.**

* People CORRECT
* Infrastructure
* Product
* Processes

Explanation: Informed people will people will provide intelligent design, operations and maintenance, as well as higher quality service and safety.

**4. Cobots function was to allow computer control of motion by \_\_\_\_\_\_\_\_**

* Payload CORRECT
* Power
* Motors
* Human worker

Explanation: Cobots function was to allow computer control of motion, by redirecting or steering a payload, in a cooperative way with human worker. Later cobots provided limited amounts of motive power as well.

**5. ICT stands for \_\_\_\_\_\_\_\_\_\_\_\_**

* Industrial Communication Technology
* Information Connect Technology
* Internet Communication Technology
* Information Communication Technology CORRECT

Explanation: It discusses scope of Big Data Analysis, Information Communication Technology and Ambient Intelligence.

**6. \_\_\_\_\_\_\_\_ oscillates as one ear peaks in perception before the other takes a turn.**

* Auditory decision making
* Auditory perception CORRECT
* Auditory perception and oscillations
* Oscillations

Explanation: Auditory perception oscillates as one ear peaks in perception before the other ear takes a turn. This is essential for accurately locating events in the environment.

**7. What is the last step in algorithm for reliable data transfer?**

* Message Relaying
* Initialization
* Selective recovery CORRECT
* Lost message detection

Explanation: Once a packet is detected, the AJIA mechanism relies on its routing metric to choose the best next hop for the packet re transmission.

**8. \_\_\_\_\_\_\_\_\_\_ Uses voice to control the devices.**

* Both Google Home and Apple HomePod CORRECT
* Google Home
* Apple HomePod
* Google Sheets

Explanation: Google Home, or Apple HomePod, takes in the user's voice to control the devices. Like, with the help of voice all the parts of our home can be done.

**9. Collaborative robots are easily integrated into existing production environment. With \_\_\_\_\_\_\_\_\_\_ articulation points.**

* 5
* 6 CORRECT
* 4
* 3

Explanation: Our three different Collaborative robots are easily integrated into existing production environment. 6 articulation points and a wide scope of flexibility.

**10. The most likely culprit is \_\_\_\_\_\_\_\_**

* Internet connectivity CORRECT
* Things
* Network
* Device

Explanation: The most likely culprit is internet connectivity, leaving end users unable to access their hosted data or even perform management functions.

1) How many numbers of the element in the open IoT architecture?

1. Four elements
2. Five elements
3. Six elements
4. Seven elements

**Answer:** (d) Seven elements

**Description:** There are seven numbers of elements in the open IoT architecture:

1. Configuration and monitoring
2. Cloud data storage
3. Scheduler
4. Request definition
5. Request presentation
6. Service delivery and utility manager
7. Sensor middleware (X-GSN)

2) Which of the following is the way in which an IoT device is associated with data?

1. Internet
2. Cloud
3. Automata
4. Network

**Answer:** (b) Cloud

**Description:** Cloud-based services provide a way for IoT devices to be connected to data. For example: Just as the WWW (World Wide Web) runs on the Internet, so does IoT.

3) Which of the following IoT networks has a very short range?

1. Short Network
2. LPWAN
3. SigFox
4. Short-range Wireless Network

**Answer:** (d) Short Range Wireless Network

**Description:** Short-range wireless networks have a very short range. This type of network is used for applications running in the local environment. The best example of this network is Wi-Fi and Bluetooth.

4) What is the full form of the LPWAN?

1. Low Protocol Wide Area Network
2. Low Power Wide Area Network
3. Long Protocol Wide Area Network
4. Long Power Wide Area Network

**Answer:** (b) Low Power Wide Area Network

**Description:** The full form of the LPWAN is Low Power Wide Area Network. LPWAN is a type of wireless telecommunication, and it is specially designed for M2M (Machine to Machine) and IoT devices.

5) An IoT network is a collection of \_\_\_\_\_\_ devices.

1. Signal
2. Machine to Machine
3. Interconnected
4. Network to Network

**Answer:** (c) Interconnected

**Description:** An IoT network is a collection of interconnected devices that communicate with other devices without human involvement.

6) Which one of the following is not an IoT device?

1. Amazon echo voice controller
2. Google Home
3. Nest Smoke Alarm
4. None of these

**Answer:** (d) None of the these

**Description:** These are all IoT devices. Google Home is a smart speaker that obeys all the commands given by the user. The Amazon Echo Voice Controller is also a smart speaker. The Nest Smoke Alarm is an IoT device that sends a smoke alert message to the user when a fire occurs.

7) What is the main purpose of WoT (Web of Things) in the IoT?

1. Improve the usability and interoperability
2. Reduce the security
3. Complex the development
4. Increase the cost

**Answer:** (a) Improve the usability and interoperability

**Description:** The main purpose of the Web of Things is to improve the usability and interoperability in IoT. Developing IoT Apps through WoT is much easier, faster, and less expensive.

8) What is the Arduino UNO?

1. Software
2. Hardware device
3. Network
4. Protocol

**Answer:** (b) Hardware device

**Description:** The Arduino Uno is a hardware device that is based on the Microchip ATmega328P microcontroller. It has been developed by Arduino.cc.

9) \_\_\_\_\_\_ allows the user to control electronic components.

1. Android API
2. RETful API
3. MQTT API
4. CoAP API

**Answer:** (b) RETful API

**Description:** The RETful API allows the user to control the electronic components connected to the Intel Galileo Gen 2 board via HTTP requests.

10) Which of the following is not an application of IoT?

1. Wearables
2. Smart Grid
3. Arduino
4. Smart City

**Answer:** (c) Arduino

**Description:** The Arduino Uno is a hardware device that is based on the Microchip ATmega328P microcontroller.

11) Which one of the following protocols is lightweight?

1. IP
2. HTTP
3. MQTT
4. CoAP

**Answer:** (c) MQTT

**Description:** The full form of the MQTT is Message Queue Telemetry Transport. It is a lightweight messaging protocol that runs over the TCP / IP protocol.

12) What is the role of Big Data in IoT's Smart Grid architecture?

1. Filter the data
2. Locked the data
3. Store data
4. None of the these

**Answer:** (c) Store data

**Description:** The main role of Big Data is to store data on a real-time basis. It uses multiple storage technologies to store the data.

13) What is the real example of a smart grid device in IoT?

1. Mobile phone
2. Television
3. Smart Speaker
4. Smart Meters

**Answer:** (d) Smart Meters

**Description:** Smart Grid is used to monitor the power supply. Consumers' data is collected using a smart grid, and that data is analyzed and distributed to the consumers. The real example of a smart grid device is a smart meter.

14) What is the full form of the MQTT?

1. Multi-Queue Telemetry Things
2. Multiple Queue Telemetry Things
3. Message Queue Telemetry Things
4. Message Queue Telemetry Transport

**Answer:** (d) Message Queue Telemetry Transport

**Description:** The full form of the MQTT is Message Queue Telemetry Transport. It is a lightweight messaging protocol that runs over the TCP / IP protocol.

15) What is the full form of ICT?

1. InterConnect Technology
2. Internet Connection Topology
3. Information and Communication Technology
4. Infer Communication Topology

**Answer:** (c) Information and Communication Technology

**Description:** The full form of ICT is Information and Communication Technology. ICT is a multidimensional term for the IT sector that refers to all communication technologies, including the Internet, wireless networks, cell phones, computers, and software.

16) Which of the following frequencies is correct for the Galileo gen 2 board?

1. 250 MHz
2. 400 MHz
3. 450 MHz
4. 300 MHz

**Answer:** (b) 400 MHz

**Description:** The frequency of this board is 400 MHz. The Galileo gen 2 board frequency gives the speed of operation of the board. Therefore, the speed increases as the frequency increases.

17) What is the full form of IANA?

1. Inter-Assessment-Number-Access
2. Internet-Association-Numbers-Authority
3. International-Aid-for-Network-Authority
4. Internet-Assigned-Numbers-Authority

**Answer:** (d) Internet-Assigned-Numbers-Authority

**Description:** The full form of IANA is Internet-Assigned-Numbers-Authority. It is an administrative function of the Internet that monitors the IP addresses and domain names.

18) What is the standard port number of secure MQTT?

1. 1883
2. 8000
3. 8883
4. 8888

**Answer:** (c) 8883

**Description:** The standard port number of Secure MQTT is 8883, and it is registered in IANA for Secure MQTT.

19) Which of the following layers provides end-to-end communication in IoT?

1. Logical layer
2. Data link layer
3. Transport layer
4. Session layer

**Answer:** (c) Transport layer

**Description:** The transport layer focuses on end-to-end communication, and it gives reliability and congestion avoidance that packets will be delivered in the same way as the user sent the packet.

20) Which of the following devices is used to measure the gases or liquid?

1. Optical Sensor
2. Gas Sensor
3. Smoke Sensor
4. Pressure sensor

**Answer:** (d) Pressure sensor

**Description:** The pressure sensor is used to measure the gases or liquid. Pressure is the expression of a force that is necessary to prevent fluid from expansion.

21) Which interface does the fingerprint sensor use?

1. UART interface
2. CoAP interface
3. SPI interface
4. I2P interface

**Answer:** (a) UART interface

**Description:** The fingerprint sensor uses a UART interface to store fingerprint data. It can be configured in 1:1 or 1:N mode to identify the person.

22) Which of the following protocols is used by USART?

1. RS32
2. RS232C
3. 4RS85
4. All of the these

**Answer:** (b) RS232C

**Description:** The most commonly used protocol for USART in asynchronous mode is RS232C. This protocol describes the physical interface for relatively low-speed serial data-communication between devices and computers.

23) What is the full form of HDLC?

1. Higher Data Level Communication
2. Higher Data Link Communication
3. High-level Data Link Control
4. High Data Level Control

**Answer:** (c) High-level Data Link Control

**Description:** The full form of the HDLC is High level Data Link Control. It is a communication protocol. It is used to transmit data between nodes and data points.

24) Which of the following "bit" defines the address bit in the control register?

1. ML
2. MM
3. RXWake
4. None of the these

**Answer:** (b) MM

**Description:** The MM bit defines the address bit in the control register.

25) What is another name for I2C?

1. Signal wire interface
2. Two wire interfaces
3. UART
4. USART

**Answer:** (b) Two wire interface

**Description:** The I2C protocol is also known as the two-wire interface. It is a simple serial-communication-protocol that uses pins of a microcontroller, named as serial clock (SCL) and serial data (SDA).

26) When the clock line SCL is high, the SDA is \_\_\_\_ transitioned.

1. Low
2. High
3. Medium
4. All of the these

**Answer:** (a) Low

**Description:** When the clock line SCL is high, the SDA is low transitioned. Under normal circumstances, this does not happen, as you can see in the subsequent clock pulses that the data line is stable in one state, either high or low, when the clock line is high.

27) Which of the following protocols does the secure digital card application use?

1. XMPP
2. SPI
3. MQTT
4. HTTPS

**Answer:** (b) SPI

**Description:** SPI stands for Serial Peripheral Interface. The SPI protocol is commonly used to secure digital card applications and liquid crystal displays.

28) How many logic signals are there in the SPI protocol?

1. Five signals
2. Six signals
3. Nine signals
4. Zero signals

**Answer:** (a) Five signals

**Description:** There are five logic signals in the SPI protocol.

1. SCLK (Serial Clock): This signal is used to clock-signal.
2. MOSI (Master Output Slave Input): This signal is used to transfer the data from master to slave.
3. MISO (Master Input Slave Output): This signal is used to transfer the data from slave to master.
4. SDIO (Serial Data I/O)
5. SS (Slave Select)

29) What does MOSI mean?

1. MOSI is a network line.
2. MOSI is a clock signal that sends the clock signals from master to slave.
3. MOSI is a data line that sends the data from master to slave.
4. None of the these

**Answer:** (c) MOSI is a data line that sends the data from master to slave.

**Description:** MOSI stands for Master Out Slave In. MOSI is a data line that sends the data from master to slave.

30) What is the full form of HART?

1. Highway Application Remote Transport
2. Highway Addressable Remote Transducer
3. High Address Reduce Transport
4. High Application Remote Transport

**Answer:** (b) Highway Addressable Remote Transducer

**Description:** The full form of HART is Highway Addressable Remote Transducer. It is a master and slave protocol in which a slave device only speaks when spoken by a master.

31) What is the range of z-wave?

1. 30 to 100 m
2. 300 to 1000 m
3. 100 to 1000 m
4. Only 10 m

**Answer:** (a) 30 to 100 m

**Description:** The Z-Wave is a low-power Mac protocol designed especially for smart home and small business domains. It covers the range from 30 to 100 m.

32) Which of the following topology is used for ZigBee Smart Energy?

1. Bus Topology
2. Ring Topology
3. Star Topology
4. Any Topology

**Answer:** (c) Star Topology

**Description:** ZigBee Smart Energy is designed for a wide range of IoT applications. It supports a wide range of network topologies, such as star topology.

33) Which of the following protocols does not exist at the data link layer?

1. ZigBee Smart Energy
2. LoRaWAN
3. WirelessHART
4. Secure MQTT

**Answer:** (d) Secure MQTT

**Description:** Secure MQTT is a session layer protocol. It is an extended version of the MQTT protocol that uses encryption based on lightweight attribute-based encryption.

34) Which of the following is the type of SPI controller?

1. Micro-wire or plus
2. Microwire
3. Data SPI
4. Queued SPI

**Answer:** (d) Queued SPI

**Description:** A Queued SPI is a type of SPI controller that is used to send a data queue from the SPI bus.

35) What is MQTT primarily used for?

1. User communication
2. System transfer
3. Machine to Machine Communication
4. Create connection

**Answer:** (c) Machine-to-Machine Communication

**Description:** MQTT is a public messaging protocol. It is designed for lightweight "Machine to Machine" communication. It was originally developed by IBM.

36) What is the frequency rate of z-wave?

1. 908.42 GHz
2. 928.49 GHz
3. 888.42 GHz
4. 708.49 GHz

**Answer:** (a) 908.42 GHz

**Description:** The frequency rate of z-wave is 908.42 GHz. The Z-Wave is a low-power Mac protocol designed especially for smart home and small business domains.

37) What is another name of the tactile sensor?

1. Weight sensor
2. Imaging sensor
3. Proximity sensor
4. Touch sensor

**Answer:** (d) Touch sensor

**Description:** The tactile sensor is also called a touch sensor. It is an electronic sensor used for detecting physical touch. The size of this sensor is very small.

38) How many types of capacitive touch sensors in IoT?

1. Two types
2. Five types
3. Seven types
4. Nine types

**Answer:** (a) Two types

**Description:** Two types of capacitive touch sensors in IoT:

* Projected-capacitive sensing
* Surface-capacitive sensing

39) Which of the following touch sensors is used in a cell phone?

1. Resistive touch sensors
2. Human sensor
3. Capacitive touch sensor
4. Follow sensor

**Answer:** (c) Capacitive touch sensor

**Description:** The capacitive touch sensors are widely used in portable devices such as cell phones. The main reason for this sensor development on the phone is low cost, durability, and design.

40) Which of the following languages does GSN work on?

1. Python
2. JAVA
3. Android
4. C++

**Answer:** (b) JAVA

**Description:** GSN stands for Global Sensor Network. GSN works on JAVA language because JAVA language is portable in nature. The other language (such as C, C++, Python, and HTML) is not portable in nature.

41) Which of the following is the example of a short-range wireless network?

1. VPN
2. Wi-Fi
3. Internet
4. WWW

**Answer:** (b) Wi-Fi

**Description:** Short-range wireless networks have a very short range. This type of network is used for applications running in the local environment. Examples of this network are Wi-Fi and Bluetooth.