NPTEL Online Certification Courses

Indian Institute of Technology Kharagpur

Introduction to Internet of Things

Assignment-Week 1

TYPE OF QUESTION: MCQ/MSQ

Number of questions: 15 **Total marks: 15 X 1= 15**

QUESTION 1:

Which of the following is/are the characteristics of IoT?

a. Efficient, scalable and associated architecture.
b. Unambiguous naming and addressing.
c. Abundance of sleeping nodes, mobile and non-IP device.
d. All of the these

Correct Answer: d. All of the these

Detailed Solution: Characteristics of IoT are –

a. Efficient, scalable and associated architecture.
b. Unambiguous naming and addressing.
c. Abundance of sleeping nodes, mobile and non-IP device.

See lecture 1 (Introduction to IoT – Part - I) @ 16:06

QUESTION 2:

A _____ allows us to use our smartphones to lock and unlock our door remotely at our homes or our businesses.

a. Smart Meter
b. ATM
c. Digital Lock
d. Web

Correct Answer: c. Digital Lock

Detailed Solution: Smartphones can be used to lock and unlock doors remotely, and business owners can change key codes rapidly to grant or restrict access to employees and guests.

See lecture 1 (Introduction to IoT – Part - I) @ 25:35

QUESTION 3:

The function/functions of an IoT Gateway is/are to?

a. Forward packets between LAN and WAN and on the IP layer
b. Connect IoT LAN to a WAN
c. Both (a) and (b)
d. None of these

Correct Answer: c. Both (a) and (b)

Detailed Solution: An IoT Gateway is a router connecting the IoT LAN to a WAN to the Internet, can implement several LAN and WAN, Forwards packets between LAN and WAN and on the IP layer.

See lecture 2 (Introduction to IoT – Part - II) @ 04:44

QUESTION 4:

Multi-homing is the concept where a node can be connected to multiple networks for _____.

a. Reduced Reliability
b. Improved Reliability
c. None of these
d. Both (a) and (b)

Correct Answer: b. Improved Reliability

Detailed Solution: Multi-homing is a concept where a node or an IoT device or a sub-network can be connected to multiple networks for improving the reliability.

See lecture 2 (Introduction to IoT – Part - II) @ 15:27

QUESTION 5:

A Passive Infrared Ray (PIR) sensor is used for _____?

a. Humidity Detection
b. Tilt Detection
c. Obstacle Detection
d. Smoke Detection

Correct Answer: c. Obstacle Detection

Detailed Solution: Passive Infrared Ray (PIR) sensor can be used to detect if there is any obstacle.
See lecture 3 (Sensing) @ 04:13

QUESTION 6:

For which of the following, Vector Sensors are required to measure or sense them?

a. Color, Pressure, Temperature
b. Orientation, Image
c. None of these
d. Both (a) and (b)

Correct Answer: b. Orientation, Image

Detailed Solution: Vector Sensors produce output signal or voltage which is generally proportional to the magnitude, direction, as well as the orientation of the quantity being measured. Physical quantities such as sound, image, velocity, acceleration, orientation, etc. are all vector quantities, as only their magnitude is not sufficient to convey the complete information.

See lecture 3 (Sensing) @ 16:14

QUESTION 7:

The sensitivity of a sensor under real conditions may differ from the value specified. This is called _____?

a. Maximal Error
b. Minimal Error
c. Median Error
d. Sensitivity Error

Correct Answer: d. Sensitivity Error
Detailed Solution: The sensitivity of a sensor under real conditions may differ from the value specified. This is called sensitivity error.

See lecture 3 (Sensing) @ 19:33

QUESTION 8:

A random deviation of the signal that varies in time is called _____.

a. Noise
b. Sound
c. Bias
d. None of these

Correct Answer: a. Noise.

Detailed Solution: Noise is a random deviation of the signal that varies in time.

See lecture 3 (Sensing) @ 22:42

QUESTION 9:

A Relay Switch is an example of _____.

a. A Sensor
b. An Actuator
c. A Transducer
d. None of These

Correct Answer: b. An Actuator

Detailed Solution: Relay Switch is an example of an actuator. It is an electromechanical switch that can be used to perform On/Off operations of electrical appliances.

See lecture 4 (Actuation) @ 01:37

QUESTION 10:

What is a Pneumatic Actuator?

a. It is a type of actuator driven by compressed air or vacuum
b. It is a type of actuator driven by fluid
c. It is a type of actuator driven by solid
d. None of these

Correct Answer: a. It is a type of actuator driven by compressed air or vacuum

Detailed Solution: A pneumatic actuator converts energy formed by vacuum or compressed air at high pressure into either linear or rotary motion.

See lecture 4 (Actuation) @ 07:55

QUESTION 11:

Which type of actuators tend to be compact, lightweight, economical, and with high power density?

a. Thermal or Magnetic Actuators
b. Hydraulic Actuators
c. Both (a) and (b)
d. None of these

Correct Answer: a. Thermal or Magnetic Actuators

Detailed Solution: Thermal or Magnetic Actuators can be actuated by applying thermal or

magnetic energy. They tend to be compact, lightweight, economical, and with high power density.

See lecture 4 (Actuation) @ 11:46

QUESTION 12:

Polymer based actuators designed to handle fragile objects like fruit harvesting in agriculture or manipulating internal organs in biomedicine are called?

a. Pneumatic Actuators
b. Soft Actuators
c. Software Actuators
d. Hardware Actuators

Correct Answer: b. Soft Actuators

Detailed Solution: Soft Actuators are polymer-based actuators designed to handle fragile objects like fruit harvesting in agriculture or manipulating internal organs in biomedicine.

See lecture 4 (Actuation) @ 14:55

QUESTION 13:

Full form of SMP is _____?

a. Soft Memory Polymer
b. Shape Memory Polymer
c. Software Memory Polymer
d. None of these

Correct Answer: b. Shape Memory Polymer

Detailed Solution: Shape Memory Polymer (SMP) actuators function similar to our muscles, even providing a response to a range of stimuli such as light, electrical, magnetic, heat, pH, and moisture changes.

See lecture 4 (Actuation) @ 15:16

QUESTION 14:

Duty Cycling of the sensors is managed by which component of IoT?

a. Application
b. Real-Time Kernel
c. Radios
d. Power Management Unit

Correct Answer: d. Power Management Unit

Detailed Solution: Power Management Unit does things like duty cycling of sensors that is how much time they are to be powered on and how much time they will be off.

See lecture 5 (Basics of IoT Networking – Part - I) @ 13:39

QUESTION 15:

Which of the following are challenges of IoT

a. Security
b. Complexity Management
c. Modeling and Analysis
d. All of these

Correct Answer: d. All of these

Detailed Solution: IoT Challenges are –

- Security
- Modeling and Analysis
- Complexity Management
- Scalability
- Energy Efficiency
- Interfacing
- Interoperability
- Data Storage
- Data Analytics

See lecture 5 (Basics of IoT Networking – Part - I) @ 24:40

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