

WEEK 7 2020A

## Assignment 7

The due date for submitting this assignment has passed.  
As per our records you have not submitted this assignment.

Due on 2020-03-18, 23:59 IST.

- 1) In Smart warehousing systems, sensors and actuators are connected through:  
**1 point**
- a. Web server
  - b. Administrator
  - c. Smart gateway
  - d. None of the above

- a.
- b.
- c.
- d.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
c.

- 2) Which of the following is not part of the IoT layer in IIoT-based industrial manufacturing?  
**1 point**
- a. Communication infrastructure
  - b. Manufacturing resources
  - c. Manufacturing capabilities
  - d. User interface

- a.
- b.
- c.
- d.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
d.

- 3) Which one of the following is not related to complex event processing (CEP)?  
**1 point**
- a. Cannot handle multiple data streams
  - b. Extraction of causal and temporal patterns using predefined rules
  - c. Correlation among multiple streams for generating meaningful output
  - d. Near real-time processing

- a.
- b.
- c.
- d.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
a.

4)

1 point

Which of the following is not true in to IIoT processing?

- a. Different phases – produces, consumer, modelling
- b. Different topology – sensor, room, floor
- c. Workload of sensor topology is reduced compared to room topology
- d. None of the above

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

5)

Which one of the following is true for IIoT processing and analytics?

- a. The business process analytics is of three types
- b. Prescriptive analytics deals with "what already happened and currently happening"
- c. Predictive analytics deals with "what & why to perform some action"
- d. Descriptive analytics deals with "Data mining/Web mining/ Predictions"

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

a.

6)

Which of the following is not true for current CEP systems?

- a. The message queues are not scalable and incurs higher latency
- b. Message queues are not scalable
- c. Existing servers are fully utilized by deploying more servers
- d. None of the above

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

7)

Which of the following are true for self-organized multi-agent system in a smart factory?

- a. It provides increased flexibility
- b. The concept of self-organizing is achieved by intelligent negotiation between the agents
- c. Cloud-based big data processing framework assists the self-organization & supervisory control
- d. All of the above

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

d.

8) 1 point

Which one of the following is not true for Line Information System Architecture (LISA)?

- a. It provides an event-driven information system
- b. It is a loosely-coupled system with prototype oriented information model
- c. It does not provide interoperability between the standard communication interfaces
- d. None of the above

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

9) 1 point

Which of the following is not a component of PLC?

- a. Sensor
- b. Communication module
- c. Memory unit
- d. None of the above

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

a.

10) 1 point

What does EC-GSM-IoT stand for?

- a. Extended Connectivity GSM IoT
- b. Extended Coverage GSM IoT
- c. Enhanced Coverage GSM IoT
- d. None of the above

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

11) 0 points

What is the data rate for CAT-NB1?

- a. 200 Kbps
- b. 20 Kbps
- c. 250 Kbps
- d. None of the above

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

12) Which of the following is the average range supported by Sigfox? 1 point

- a. 30-50 km
- b. 3-10 km
- c. Both (a) and (b)
- d. None of the above

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

13) Which of the following is size of NodeMCU memory? 1 point

- a. 256 Kb
- b. 64 Kb
- c. 128 Kb
- d. None of the above

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

14) Which of the following statements is true for open loop control? 1 point

- a. The control action from the controller is dependent on the process output.
- b. The control action from the controller is independent of the process output.
- c. The control action from the controller is independent of the process input.
- d. None of the above

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

15) DCS is used in - 1 point

- a. Batch-oriented manufacturing processes
- b. Highly distributed plants having huge number of control loops
- c. Both a and b
- d. None of the above

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

# Week 7 Assignment 7

Assignment not submitted

Due date: 2021-03-10, 23:59 IST.

1) What does LPWAN stand for? *1 point*

- (a) Low Power Wide Area Network
- (b) Low Power Wide Antenna Network
- (c) Low Power Wattage Area Network
- (d) Low Power Wireless Area Network

(a)

2) Which modulation technique is used by LoRa? *1 point*

- (a) Spread Spectrum Modulation
- (b) BPSK
- (c) QPSK
- (d) FSK

(a)

3) What is the payload size per message supported by SIGFOX? *1 point*

- (a) 32 bytes
- (b) 256 bytes
- (c) 12 bytes
- (d) 1 byte

(a)

(b)

(c)

4)

*1 point*

Which of the following network topologies is not supported by Zigbee?

- (a) Star
- (b) Mesh
- (c) Bus
- (d) Tree

(a)  
 (b)  
 (c)

5)

*1 point*

Which type of Zigbee device is used as a bridge between different networks?

- (a) Coordinator
- (b) Router
- (c) End device
- (d) All of the above

(a)

6) What is the function of an End-device type Zigbee device?

*1 point*

- (a) Connect to parent nodes
- (b) Relay information in the network
- (c) Connect different networks
- (d) All of the above

(a)

7) Polymorphism in data refers to -

*1 point*

- (a) Data from heterogeneous sources/sensors
- (b) Different metrics
- (c) Different data formats
- (d) All of the above

(a)  
 (b)  
 (c)  
 (d)

8) What is CEP in the context of IIoT and data processing? *1 point*

- (a) Complex Event Processing
- (b) Carrier Extensive Processing
- (c) Cloud Enterprise process
- (d) None of the above

(a)

9) Which of the following is true in the context of Rule-based engine? *1 point*

- (a) It can handle only one data stream
- (b) It can process data in near real-time
- (c) Both a and b
- (d) None of the above

(a)

(b)

10) Which of the following is not a component of FarmBeats? *1 point*

- (a) UAV
- (b) Weather station
- (c) Soil Sensor
- (d) ATV

(a)

(b)

(c)

(d)

11) *1 point*

Which of the following is a necessary component of AR drones-based precision agriculture?

- (a) Video processing
- (b) Audio processing
- (c) Both a and b
- (d) None of the above

(a)

12) What is SmartSantander?	1 point
(a) IoT-based agriculture platform (b) IoT-based aerial imagery platform (c) IoT-based smart city deployment platform (d) All of the above	
<input type="radio"/> (a) <input type="radio"/> (b) <input checked="" type="radio"/> (c)	
13) Which of the following is not a component of industrial control systems?	1 point
(a) Controllers (b) Manipulating Variables (c) Process variables (d) Non-processing variables	
<input type="radio"/> (a) <input type="radio"/> (b) <input type="radio"/> (c) <input checked="" type="radio"/> (d)	
14) Decision taken by controllers is based on -	1 point
(a) Comparison between process variables and set points (b) Comparison between manipulating variables and set points (c) Temperature values (d) Manual entries	
<input checked="" type="radio"/> (a)	
15) What are the two types of control loops observed in industrial control systems?	1 point
(a) Open and closed loop control (b) Primary and secondary loop control (c) Input and output loop control (d) None of the above	
<input checked="" type="radio"/> (a)	

## Week 7 : Assignment 7

Assignment not submitted

Due date: 2021-09-15, 23:59 IST.

1)

Which of the following is/are not considered as LPWAN technology?

- a. SIGFOX
- b. LoRa
- c. Z-wave
- d. All of the above

- (a)
- (b)
- (c)
- (d)

2)

SigFox operates on \_\_\_\_\_.

- a. Unlicensed ISM radio band
- b. Licensed band
- c. Semi-licensed band
- d. None of the above

- (a)
- (b)
- (c)
- (d)

3)

What is the required amount of voltage for interfacing DTH with NodeMCU?

- a. 3.3V
- b. 5.5V
- c. 4V
- d. 2V

- (a)
- (b)
- (c)
- (d)

4)

Zigbee is based on the \_\_\_\_\_ standard.

- a. IEEE 802.14.4
- b. IET 802.15.4
- c. IEEE 802.15.4
- d. IET 802.14.4

- (a)
- (b)
- (c)
- (d)

5)

Which library is used for interfacing Zigbee with Python?

- a. zbee
- b. xbee
- c. pxbee
- d. xbee-learn

- (a)
- (b)
- (c)
- (d)

6)

Which of the following software(s) is/are used for configuring Zigbee?

- a. Arduino
- b. NetBeans
- c. XCTU
- d. Both (a) and (b)

- (a)
- (b)
- (c)
- (d)

7)

According to CISCO, how many connected devices (in billions) will be integrated into global communication by 2020?

- a. 50
- b. 5
- c. 0.5
- d. 0.005

(a)

(b)

(c)

(d)

8)

In a generic end-to-end architecture of IIoT processing, how many steps are involved?

- a. 4
- b. 5
- c. 6
- d. 7

(a)

(b)

(c)

(d)

9)

MIDAS is a platform for \_\_\_\_\_.

↳

- a. IIoT/M2M
- b. IoT/M2M
- c. IIoT/D2D
- d. Io/D2D

(a)

(b)

(c)

(d)

10)

How many components are there in FarmBeats?.

- a. 3
- b. 4
- c. 5
- d. 7

(a)

(b)

(c)

(d)

11) Which of the following is/are required in a generic AR drones-based PA?

- a. GPS tagging of video
- b. Video capturing
- c. Extraction of weed coordinates
- d. All of the above

(a)  
 (b)  
 (c)  
 (d)

12) A contemporary smart warehousing follows a \_\_\_\_\_-based framework.

- a. MQTT
- b. REST
- c. CoAP
- d. All of the above

(a)  
 (b)  
 (c)  
 (d)

13) Which of the following belong(s) to the four major components of Control Systems?

- a. Process components
- b. Set points
- c. Controller
- d. All of the above

(a)  
 (b)  
 (c)  
 (d)

14) How many types of loops are present in a generic control system?

- a. 2
- b. 3
- c. 4
- d. 5

(a)  
 (b)  
 (c)  
 (d)

15)

Architecture of SCADA involves \_\_\_\_\_.

- a. HMI
- b. PLC
- c. RTU
- d. All of the above

(a)  
 (b)  
 (c)  
 (d)

WEEK 7 2022A

## Week 7 : Assignment 7

Assignment not submitted

Due date: 2022-03-16, 23:59 IST.

1) In North America, which frequency band is used for LoRa? **1 point**

- (a) 169 MHz
- (b) 433 MHz
- (c) 868 MHz
- (d) 915 MHz

2) SIGFOX radio link operates on \_\_\_\_\_. **1 point**

- (a) Both licensed and unlicensed ISM band
- (b) Only licensed ISM band
- (c) Only unlicensed ISM band
- (d) None of the above

3) What does a DHT sensor measure?

**1 point**

- (a) Temperature
- (b) Humidity
- (c) Both (a) and (b)
- (d) None of the above

4) Which of the following IEEE standards is followed by the physical and MAC layer protocols in ZigBee?

**1 point**

- (a) IEEE 801.15.4
- (b) IEEE 802.15.4
- (c) IEEE 803.15.4
- (d) IEEE 804.15.4

5) Coordinator ZigBee devices act as the bridge between \_\_\_\_\_.

**1 point**

- (a) Different networks
- (b) Different edge devices
- (c) Different fog devices
- (d) All of the above

6) In python, how can we install the Xbee library?

**1 point**

- (a) pip install xbee
- (b) pip3 install xbee
- (c) python -m pip install xbee
- (d) All of the above

7) How many network topologies are supported by ZigBee?

**1 point**

- (a) 2
- (b) 4
- (c) 3
- (d) 5

8) Which of the following is/are considered as a message broker in real-time IoT systems?

**1 point**

- (a) Apache Kafka
- (b) MqTT
- (c) Both (a) and (b)
- (d) None of the above

9) What does CPS stand for? **1 point**

- (a) Cyber Physical System
- (b) Cyclic Physical System
- (c) Cyber Physical Sequence
- (d) Computer-Physiological System

10) Smart warehousing uses \_\_\_\_\_ -based framework. **1 point**

- (a) Both RIFT and RIST
- (b) Only RIFT
- (c) Only RIST
- (d) Only REST

11) What does iRobot-Factory enforce to improve its manufacturing process? **1 point**

- (a) Cognitive intelligence
- (b) Managerial intelligence
- (c) Logistic intelligence
- (d) All of the above

12) The architectural layers of SmartSantander include \_\_\_\_\_. **1 point**

- (a) Accessible, Authorization, and Accounting subsystem
- (b) Authentication, Authorization, and Accounting subsystem
- (c) Authentication, Authorization, and Accommodation subsystem
- (d) None of the above

13) Which of the following is/are considered as the component(s) of AR Drone-based precision agriculture? **1 point**

- (a) Sprayer installed in a tractor
- (b) laptop
- (c) Both (a) and (b)
- (d) None of the above

14) What type of computer programs are used to execute the control actions in PLCs? **1 point**

- (a) Pre-defined
- (b) Dynamic
- (c) Evolutionary
- (d) None of the above

15) A typical industrial control system includes \_\_\_\_\_ major components. **1 point**

- (a) 1
- (b) 2
- (c) 3
- (d) 4

WEEK 7 2022B

## Week 7 : Assignment 7

Assignment not submitted

Due date: 2022-09-14, 23:59 IST.

1) LPWAN enables long range wireless communication among “things” at a \_\_\_\_\_. **1 point**

- (a) Low bit rate
- (b) High bit rate
- (c) Customized bit rate
- (d) None of the above

- a
- b
- c
- d

2) “LoRa defines only the physical layer of the OSI stack, LoRaWAN handles the networking aspects of communication.” True or false? **1 point**

- (a) True
- (b) False

- a
- b

3) The SIGFOX radio link operates in the \_\_\_\_\_. **1 point**

- (a) Unlicensed ISM radiobands
- (b) Licensed ISM radiobands
- (c) Both (a) and (b)
- (d) None of the above

- a
- b
- c
- d

- 4) Xbee is a \_\_\_\_\_. 1 point
- (a) Mesh communication protocol based on the IEEE802.15.4  
(b) Product that uses the Zigbee communication protocol for radio communication.  
(c) All of the above  
(d) None of the above
- a  
 b
- 5) Which of the following is/are true about ZigBee? 1 point
- (a) Zigbee is a communication protocol with its physical layer-based on the IEEE 802.15.4.  
(b) Supports 4 topologies: Bus, Star, Tree and Mesh  
(c) Used in home and industrial automation applications  
(d) All of the above
- a
- 6) In Zigbee, end devices \_\_\_\_\_. 1 point
- (a) Acts as a bridge between different networks.  
(b) Relays the information to other nodes in the network  
(c) Responsible to connect to the parent node, no relaying of information is supported.  
(d) None of the above
- a  
 b  
 c
- 7) The main components of Distributed Control Systems (DCS) \_\_\_\_\_. 1 point
- (a) Central supervisory controller  
(b) Distributed controllers  
(c) Field devices such as sensors and actuators  
(d) All of the above
- a  
 b  
 c  
 d
- 8) Which of the following is/are type(s) of Industrial Control Systems? 1 point
- (a) Programmable Logic Controllers (PLCs)  
(b) Distributed Control Systems (DCS)  
(c) Supervisory control and Data Acquisition (SCADA)  
(d) All of the above
- a  
 b  
 c  
 d
- 9) Which one is correct Pin configuration of a DHT sensor? 1 point
- (a) PIN 1- 3.3V-5V Power supply, PIN 2- Data, PIN 3- Null and PIN 4- Ground  
(b) PIN 1- Data, PIN 2- 3.3V-5V Power supply, PIN 3- Null and PIN 4- Ground  
(c) PIN 1- Data, PIN 2- Null, PIN 3- 3.3V-5V Power supply and PIN 4- Ground  
(d) PIN 1- Ground, PIN 2- Data, PIN 3- Null and PIN 4- 3.3V-5V Power supply
- a  
 b

- 10) Which one is the correct NodeMCU – DHT interfacing? 1 point
- (a) GPIO 4 – Data, 3V3 – Vcc, and Gnd – Gnd  
(b) GPIO 4 – Gnd, 3V3 – Vcc, and Gnd – Data  
(c) GPIO 4 – Vcc, 3V3 – Data, and Gnd – Gnd  
(d) None of the above
- a
- 11) What does iRobot-Factory enforce to improve its manufacturing process? 1 point
- (a) Cognitive intelligence  
(b) Managerial intelligence  
(c) Logistic intelligence  
(d) All of the above
- a
- 12) The architectural layers of SmartSantander include \_\_\_\_\_. 1 point
- (a) Accessible, Authorization, and Accounting subsystem  
(b) Authentication, Authorization, and Accounting subsystem  
(c) Authentication, Authorization, and Accommodation subsystem  
(d) None of the above
- a  
 b
- 13) Rule-based engine of IIoT processing \_\_\_\_\_. 1 point
- (a) Extract causal and temporal patterns using predefined rules  
(b) Handles multiple data streams and correlates them to provide meaningful output  
(c) Both (a) and (b)  
(d) None of the above
- a  
 b  
 c
- 14) Software layer between infrastructure layer and application layer \_\_\_\_\_. 1 point
- (a) Provides services according to device functionality  
(b) Support for heterogeneity, security  
(c) Both (a) and (b)  
(d) None of the above
- a  
 b  
 c
- 15) A typical industrial control system includes \_\_\_\_\_ types of control loop. 1 point
- (a) 1  
(b) 2  
(c) 3  
(d) 4
- a  
 b

## WEEK 7 2023A

# Week 07: Assignment 07

Assignment not submitted

Due date: 2023-03-15, 23:59 IST.

- 1) What is the maximum payload of a SIGFOX message?

1 point

- (a) 12 bytes
- (b) 140 bytes
- (c) 100 bits
- (d) 257 bytes

- 2) Which of the following modulation techniques is used by LoRA?

1 point

- (a) Frequency-hopping Spread Spectrum Modulation
- (b) Direct-sequence Spread Spectrum Modulation
- (c) Chirp Spread Spectrum Modulation
- (d) Time-hopping Spread Spectrum Modulation

- 3) Which of the following libraries is used to work with LoRA along with NodeMCU?

1 point

- (a) DHT Sensor Library
- (b) MESH library
- (c) Radiohead library
- (d) Stepper library

- 4) Which of the following protocols is used in the physical and MAC layer of the Zigbee communication protocol?

1 point

- (a) IEEE 802.3.4
- (b) IEEE 802.15.4
- (c) IEEE 804.15.4
- (d) IEEE 805.3.4

- 5) What is a coordinator device in Zigbee network?

1 point

- (a) It is a device to relay information to other nodes in the network
- (b) It is a node to generate power for the other nodes in the network
- (c) It is only connected to the parent node with no data relaying
- (d) It is the root of the network and acts as a bridge between different networks

- 6) XCTU is a software for configuration of which of the following devices?

1 point

- (a) NodeMCU
- (b) LoRa
- (c) Xbee
- (d) Bluetooth

- 7) What is/are the characteristic(s) of IIoT data?

1 point

- (a) Correlation in space, time and other dimensions
- (b) Temporal and causal relationships in data
- (c) Polymorphism
- (d) All of the above

- 8) What is the function of Rule-based engine in Complex Event Processing (CEP)?

1 point

- (a) Extract causal and temporal patterns using predefined rules
- (b) Provides services according to device functionality
- (c) Handle single data stream at a time
- (d) Batch processing

- 9) Middleware is a software layer between infrastructure layer and application layer IIoT. True or false?

1 point

- (a) True
- (b) False

- 10) What are the different types of business processing analytics? 1 point
- (a) Industrial, private, public  
 (b) Descriptive, prescriptive, predictive  
 (c) Actuation and sensing  
 (d) Predictive, visualization, actuation
- 11) What type of analytics is supported by MIDAS: IoT/M2M platform? 1 point
- (a) Batch analytics  
 (b) Runtime analytics  
 (c) Both a and b  
 (d) None of the above
- 12) Industrial rechargeable sensor network uses \_\_\_\_\_ for grid-based routing and charging. Fill in the blanks. 1 point
- (a) Proactive algorithm  
 (b) Reactive algorithm  
 (c) Genetic algorithm  
 (d) TCAM
- 13) What are the 4 major components of an industrial control system? 1 point
- (a) Set points, process variables, controllers, and manipulating variables  
 (b) Data plane, control plane, variables, and controllers  
 (c) Set points, dynamic points, variables, and controllers  
 (d) Feedback loop, controllers, variables, and actuation
- 14) How many types of control loops are there in industrial control system? 1 point
- (a) Two  
 (b) Four  
 (c) Three  
 (d) Six
- 15) Which of the following types of industrial control systems is used for a highly distributed industrial plant? 1 point
- (a) SCADA  
 (b) PLC  
 (c) DCS  
 (d) None of the above

WEEK 7 2023B

# Week 7 : Assignment 7

Assignment not submitted

Due date: 2023-09-13, 23:59 IST.

1) What is the payload per message of SIGFOX?

1 point

- a. 10 bytes
- b. 11 bytes
- c. 12 bytes
- d. 13 bytes

a.

b.

c.

d.

2) Which of the following is a processor?

1 point

- a. DHT
- b. LoRa
- c. NodeMCU
- d. None of the above

a.

b.

c.

d.

3)

1 point

"We can use Arduino IDE to program a NodeMCU board." --- Is this statement True/False?

- a. True
- b. False

a.  
 b.

4) Which of the following topology(ies) is/are supported by ZigBee?

1 point

- a. Star
- b. Tree
- c. Mesh
- d. All of the above

a.  
 b.  
 c.  
 d.



5) Which software is used to configure XBee? 1 point

- a. XCTU
- b. Arduino IDE
- c. NodeMCU
- d. DHT

a.

6) Which Python library is necessary/imported while using Xbee? 1 point

- a. numpy
- b. TensorFlow
- c. DigiMesh
- d. OpenCV

a.

b.

c.

7) . Which of the following statements is true about Complex Event Processing (CEP)? 1 point

- a. It analyses and correlates event stream from different data sources
- b. Can process data in near real-time
- c. Extract causal and temporal patterns using predefined rules
- d. All of the above

a.

b.

c.

d.

8) Edge provides \_\_\_\_\_ computing, and cloud provides \_\_\_\_\_ computing. 1 point

- a. distributed, decentralized
- b. centralized , distributed
- c. distributed, centralized
- d. decentralized , distributed

a.

b.

c.

d.

9)

1 point

What are the Enablers of Prescriptive analytics in the context of IIoT - Processing & Analytics?

- a. Optimization/Simulation/Decision models
- b. Data mining/Web mining/predictions
- c. Dashboard/Reports/Scorecards
- d. All of the above

a.

b.

c.

d.

1 point

What are the component of FarmBeats?

- a. Soil sensors, camera, UAVs, weather station, IoT gateway, IoT base station, cloud-services
- b. Farmers, Brokers, customers, transport, markets
- c. Sensors, weather station, gateway, base station, cloud
- d. Sensors, virtual entity, analytics & learning, data management, service management

a.

1 point

What is SWAMP?

- a. Water management system
- b. Data-driven precision agriculture
- c. Irrigation management for different types of crops & climate in different countries
- d. Analytics to empower understanding of plant growth according to soil and climatic conditions

a.

b.

c.

12) Which of the following provides Cognitive Manufacturing?

1 point

- a. SmartSantander
- b. iRobot-Factory
- c. FarmBeats
- d. None of the above

a.

b.

13)

1 point

What are the three different phases of smart manufacturing?

- a. Organize & process data, decision making, and Generating & controlling the events in real-time
- b. Collection of the service offerings & infrastructure, virtualization, allocation & management of services, and on-demand service provisioning
- c. Authentication, Authorization and Accounting (AAA), Test bed management, and Application
- d. Integration of data and contextual information, synthesis & analysis, innovation in process & production

- a.
- b.
- c.
- d.

14) What is the three user entities in Industrial Manufacturing?

1 point

- a. Providers, manufacturers, operators
- b. Providers, consumers, operators
- c. Providers, manufacturers, distributors
- d. Providers, consumers, distributors

- a.
- b.

15) How many major components comprise Industrial Control Systems?

1 point

- a. 4
- b. 5
- c. 6
- d. 7

A

WEEK 7 2024A

## Week 7 : Assignment 7

Assignment not submitted

Due date: 2024-03-13, 23:59 IST.

- 1) Which of the following stands for LP in LPWAN?

1 point

- a. Large Power
- b. Light Power
- c. Low Power
- d. Long Range

- a.
- b.
- c.
- d.



- 2) "We need to pay a license fee to use LoRa in the 868 MHz radio frequency band in Europe." State True or False.

1 point

- a. True
- b. False

- a.
- b.



- 3) Which of the following is true about the SIGFOX network in terms of messages and payload?

1 point

- a. Up to 50 messages per day with a payload of 8 bytes per message
- b. Up to 75 messages per day with a payload of 10 bytes per message
- c. Up to 140 messages per day with a payload of 12 bytes per message
- d. Up to 200 messages per day with a payload of 15 bytes per message

C

4) Which library (header file) is used for interfacing the DHT22 sensor as demonstrated in the Hands On Industrial Environment Monitoring project?

1 point

- a. DHT.h
- b. DHT22.h
- c. DHT11.h
- d. Adafruit\_DHT.h

a.  
 b.  
 c.  
 d.



5) Which of the following topologies are supported by Zigbee?

1 point

- a. Point-to-Point and Star
- b. Bus and Ring
- c. Tree, and Mesh
- d. Ring and Mesh

a.  
 b.  
 c.



6) The physical and MAC layers of the Zigbee communication protocol is based on \_\_\_\_\_ . Fill in the blanks.

1 point

- a. IEEE 802.11
- b. IEEE 802.15.4
- c. IEEE 802.3
- d. IEEE 802.16



1 point

7) "Xbee is a mesh communication protocol based on the IEEE 802.15.4 whereas Zigbee is the product that uses the Xbee communication protocol for radio communication." State true or false.

- a. True
- b. False

a.  
 b.



8) Which of the following functions is performed by the coordinator node in a Zigbee network?

1 point

- a. Data relay
- b. End device connector
- c. Acts as the root of the network and bridge between different networks
- d. Control plane

a.  
 b.  
 c.



- 9) Which of the following is/are the data characteristics of IIoT processing?
- a. Polymorphism
  - b. Temporal relationships in data
  - c. Correlation in space, time, and other dimensions
  - d. All of the above

1 point

d

- 10) Which of the following is false about the rule-based engine?
- a. Extract causal and temporal patterns using predefined rules
  - b. Handles multiple data streams and correlates them to provide meaningful output
  - c. Cannot process data in near real-time
  - d. Performs decision-making processes based on predefined rules

1 point

- a.
- b.
- c.
- d.

- 11) Which of the following represents the limitation of current CEP systems?
- a. Manual threshold specification
  - b. Run-time update of threshold not possible
  - c. Not context-aware
  - d. All of the above

1 point

- a.
- b.
- c.
- d.

- 12) Which of the following options is false about the services rendered by the Smart Water Management System?
- a. Entirely non-replicable services
  - b. Fully customizable services
  - c. Application-specific services
  - d. Entirely replicable services

1 point

- a.

- 13) "iRobot-Factory is a cognitive manufacturing factory which applies cognitive intelligence and edge computing for improved manufacturing." State true or false.
- a. True
  - b. False

1 point

- a.
- b.

14) Which of the following is false about the design of the SmartSantander?

1 point

- a. Heterogeneity
- b. Reliability
- c. Mobility
- d. Unrealistic experimentation

a.  
 b.  
 c.  
 d.



15) Which of the following represents a type of Industrial Control System?

- a. Programmable Logic Compiler
- b. Decentralized Control Suite
- c. Supervisory Control and Data Acquisition
- d. Distributed Compiled System

a.  
 b.  
 c.  
 d.

