

Unit 2 - Week 0

Course outline

How does an NPTEL online course work?

Week 0

Quiz : Assignment 0

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Detailed Assignment Solution

Live Interactive Session

Assignment 0

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

Due on 2020-01-27, 23:59 IST.

1)

What does IoT stands for?

a. Identity of Things

b. Integration of Things

c. Internet of Things

d. Internet of Connected Things

☐ a.

☐ b.

☐ c.

☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

1 point

2)

Which of the following is true for IoT?

a. IoT adds intelligence to devices

b. IoT creates networks of connected devices

c. IoT devices should have unique identity

d. All of the above

☐ a.

☐ b.

☐ c.

☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

1 point

3)

Which of the following standards is used in WiFi?

a. IEEE 802.11

b. IEEE 802.15

c. IEEE 802.13

d. None of the above

☐ a.

☐ b.

☐ c.

☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

1 point

4)

What does RFID stands for?

a. Radio-Frequency Identification

b. Remote-Frequency Identification

c. Radio-Frequency Internet Data

d. None of the above

☐ a.

☐ b.

☐ c.

☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

1 point

5)

The devices in IoT networks use only wireless communication?

a. True

b. False

☐ a.

☐ b.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

1 point

6)

What is MQTT?

a. Communication Protocol

b. IEEE Standard

c. Wireless Device

d. None of the above

☐ a.

☐ b.

☐ c.

☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

1 point

7)

What does IIoT stands for?

a. Inbuilt Internet of Things

b. Implemented Internet of Things

c. Industrial Internet of Things

d. None of the above

☐ a.

☐ b.

☐ c.

☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

1 point

8)

Which of the following is true?

a. IIoT is a subset of IoT

b. IoT is a subset of IIoT

c. Both (a) and (b)

d. None of the above

☐ a.

☐ b.

☐ c.

☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

1 point

9)

Which of the following environment is a part of IIoT?

a. Smart Factory

b. Smart Watch

c. Smart home

d. All of the above

☐ a.

☐ b.

☐ c.

☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

1 point

10)

What is WSN?

a. Wireless Sensor Network

b. Wired Sensor Network

c. Wireless Static Network

d. None of these

☐ a.

☐ b.

☐ c.

☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

1 point

11)

Which of the following properties are of IoT devices?

a. Unique Identity

b. Energy Constraint

c. Sensing and Actuation Capability

d. All of the above

☐ a.

☐ b.

☐ c.

☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

1 point

12)

What does CPS stands for?

a. Central Processing System

b. Cyber Physical System

c. Continuous Physical System

d. None of these

☐ a.

☐ b.

☐ c.

☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

1 point

Unit 3 - Week 1

Course outline

How does an NPTEL online course work?

Week 0

Week 1

- Lecture 1 : Introduction: Sensing & Actuation
- Lecture 2 : Introduction: IoT Connectivity – Part I
- Lecture 3 : Introduction: IoT Connectivity – Part 2
- Lecture 4 : Introduction: IoT Networking – Part 1
- Lecture 5 : Introduction: IoT Networking – Part 2
- Week 1 : Lecture Material
- Quiz : Assignment 1
- Week 1 Feedback Form

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Detailed Assignment Solution

Live Interactive Session

Assignment 1

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

Due on 2020-02-12, 23:59 IST.

1) Which of the following protocol supports reading and writing of time-series data using XML serialization? 1 point

- CoAP
- MQTT
- XMPP
- IEEE 1888

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

2) Which of the following enables IoT networks to bring together massive number of objects? 1 point

- Dynamic Nature
- Connectivity
- Intelligence
- Enormous Scale

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

3) Which of the following Interface is related to CoRE? 1 point

- Resource Interface
- Lookup Interface
- Both a. and b.
- None of the above

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

4) A client with limited buffer size and sensitive to packet loss prefers? 1 point

- QoS-0
- QoS-1
- QoS-2
- Both b) and c)

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

5) Which of the following statement(s) is/are true for CoAP protocol? 1 point

- I) Uses GET message requests to retrieve subscription.
- II) Uses PUSH message requests to create subscription.
- III) Uses PUT message requests to create subscription
- a. Only I
- b. Only II
- c. I and II
- d. I and III

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

6) Which of the following network topologies are supported by the IEEE 802.15.4 standard? 1 point

- Star and Mesh
- Star and Peer-to-Peer
- Mesh and Peer-to-Peer
- None of the above

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

7) What is the operating frequency range for 6LoWPAN? 1 point

- 902–929 MHz
- 2400–2483.5 MHz
- Both (a) and (b)
- None of the above

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

8) Which access method is implemented in WirelessHART? 1 point

- FDMA
- TDMA
- CDMA
- None of the above

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

9) What are the network topologies supported by a wireless HART network? 1 point

- Star
- Mesh
- Both (a) and (b)
- None of the above

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

10) What is the network topology of Z-wave network? 1 point

- Ring
- Bus
- Mesh
- None of the above

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

11) What is the primary application area of ISA 100.11a? 1 point

- Home automation and monitoring
- Office Automation and monitoring
- Large scale industrial automation and monitoring
- All the above

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

12) What is the maximum number of devices supported by a Bluetooth device? 1 point

- 232
- 7
- Both (a) and (b)
- None of the above

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

13) Which of the following do not contribute in routing in a Zigbee network? 1 point

- Coordinator
- End Device
- Controller
- Router

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

14) Which of the following resource utilization QoS policy limits amount of message buffering? 1 point

- Resource Limits Policy
- Deadline Policy
- Time Filter Policy
- Both a) and b)

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

15) Among the following, which is an actuator? 1 point

- Microphone
- Speaker
- Both (a) and (b)
- None of the above

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

Unit 4 - Week 2

Course outline

How does an NPTEL online course work?

Week 0

Week 1

...

- Lecture 6 : Industry 4.0: The Fourth Revolution
- Lecture 7 : Industry 4.0: Sustainability Assessment of Manufacturing Industry
- Lecture 8 : Industry 4.0: Lean Production System
- Lecture 9 : Industry 4.0: Smart and Connected Business Perspective
- Lecture 10 : Industry 4.0: Smart Factories
- Week 2 - Lecture material

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Week 12

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Assignment 2

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

Due on 2020-02-12, 23:59 IST.

- When did the third industrial revolution prompted?

a. In 1950s

b. In 1960s

c. In 1970s

d. None of the above

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

2) Among the following, which is not within the scope of the fourth industrial revolution?

a. Smart Connected Machines

b. Smart Factories

c. Gene Sequencing

d. None of the above

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

3) Which is/are part of automation pyramid of a smart factory?

a. Control.

b. ERP.

c. Manufacturing execution system.

d. All of the above.

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

4) "An optimized smart factory optimizes the reliability of the product." Choose whether the statement is true or false.

a. True.

b. False.

a.

b.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

5) What is the primary responsibility of physical layer of smart and connected products?

a. To collect and acquire data from object or environment.

b. Connect the smart devices.

c. Equipped with different communication technology.

d. None of the above

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

6) Which is not a part of novelty centric business model?

a. New services.

b. Building trust.

c. New market.

d. Innovation.

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

7) Which is not a part of digital layer of smart and connected products?

a. Analyzes the data.

b. Acquires the data.

c. Stores the data.

d. Processes the data.

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

8) Which of the following describes the transportation waste in industry?

a. Excessive movements of people for materials or information

b. Excessive movements of materials

c. Non value added movement of people

d. None of the above

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

9) Which of the following describes the waiting waste in industry?

a. Excessive movements of people for materials or information

b. Period of inactivity of people for material or information

c. Non value added movement of people

d. Period of inactivity of marketing for material or information

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

10) How does energy price affect sustainability?

a. Increase in energy affects sustainability

b. Decrease in energy affects sustainability

c. Depending upon situation, increase or decrease in energy affects sustainability

d. None of the above

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

11) Which of the following is considered as one of the important aspects of population growth that affects the creation of productive society?

a. Industry location

b. Food supply

c. Politics

d. Both (a) and (c)

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

12) Which of the following is not one of the main characteristics of Business Model?

a. Strategic approach

b. Maximizing economic profits for an enterprise

c. Competitive benefits

d. None of the above

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

13) What was the main driver of the first industrial revolution?

a. Electricity and assembly line

b. Steam engine and construction of railways

c. Both (a) and (b)

d. None of the above

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

14) Resource(s) of automation is/are –

a. Control.

b. Monitor.

c. Software algorithms.

d. All of the above.

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

15) Which of the following is one of the most important aspects of Lean Production System?

a. JIDOKA

b. JIT

c. Both (a) and (b)

d. None of the above

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:

Unit 6 - Week 4

Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Week 3

Week 4

- Lecture 16 : Industry 4.0: Cybersecurity
- Lecture 17 : Basics of Industrial IoT: Introduction
- Lecture 18 : Basics of Industrial IoT: Industrial Internet Systems
- Lecture 19 : Basics of IIoT: Industrial Sensing & Actuation
- Lecture 20 : Basics of Industrial IoT: Industrial Processes – Part 1
- Week 4 - Lecture Material

Quiz : Assignment 4

Week 4 Feedback Form

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Assignment 4

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

Due on 2020-02-26, 23:59 IST.

1) What are the benefits of advance analytics in IIoT?
a. Advanced analytics helps to enhance the working condition, increase machine life and optimize operational efficiency
b. Data from array of deployed sensors and actuators can be exploited and extracted to decipher latent meanings using varieties of advanced analytic tools and algorithms
c. Analytical results can be applied in various applications
d. All of the above

1 point

- ☐ a.
☐ b.
☐ c.
☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

2) What are the issues in IIoT which is caused by lack of standardization?
a. Device interoperability
b. Semantic interoperability (data semantics)
c. Security and privacy etc.
d. All of them

1 point

- ☐ a.
☐ b.
☐ c.
☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

3) Which one of them is not an example of cybersecurity issue in IIoT?
a. Data integrity in healthcare industries
b. Data confidentiality of food industries
c. Power grid security
d. Workers' security in mining industries

1 point

- ☐ a.
☐ b.
☐ c.
☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

4) What is the landmark of the beginning of the first stage of the industrial revolution?
a. Mass production and Commercialization of steam engines
b. Invention of electricity
c. Mass Production of combustion engines
d. Development of new communication and transport systems

1 point

- ☐ a.
☐ b.
☐ c.
☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

5) Which of them are not the benefits of industrial internet in rail transportation?
a. Reducing the maintenance cost
b. Preventing engine breakdown
c. The rail operator can monitor the trains and make optimal decisions and train scheduling
d. Availing more trains and rails

1 point

- ☐ a.
☐ b.
☐ c.
☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

6) What are the catalysts in implementing industrial internet?
a. Innovations in terms of equipment, advance analytics, system platform, business processes
b. Increasing infrastructure
c. Improving cybersecurity management
d. All of the above

1 point

- ☐ a.
☐ b.
☐ c.
☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

7) Which of these are cyber-attacks?
a. Denial-of-service attack.
b. Password sniffing.
c. Trojans and viruses attack.
d. All of the above.

1 point

- ☐ a.
☐ b.
☐ c.
☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

8) Application firewall is a-
a. Software countermeasure.
b. Hardware countermeasure.
c. Malware.
d. All of the above.

1 point

- ☐ a.
☐ b.
☐ c.
☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

9) What kind of sensors are used in food packaging to track the quality of packaged food?
a. Ultrasonic sensor
b. Nano sensors
c. Gas sensor
d. Both a and b

1 point

- ☐ a.
☐ b.
☐ c.
☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

10) Which is not a part of signal conditioning circuit in a smart sensor?
a. Level shifter
b. Filters and amplifier
c. Data converters
d. Processor

1 point

- ☐ a.
☐ b.
☐ c.
☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

11) The functionality of the Cyber layer in 5C architecture is to provide
a. Optimized decision
b. Information correction
c. Intelligent identification, data mining & analytics
d. Data collection and interoperability

1 point

- ☐ a.
☐ b.
☐ c.
☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

12) For futuristic industrial plant, which is not true for the 5C architecture?
a. Cyber layer defines the networking of the smart objects
b. Conversion layer provides information correction
c. Cognition layer enables optimized decision
d. Control layer provides supervisory control

1 point

- ☐ a.
☐ b.
☐ c.
☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

13) Protection from cyber-attacks involves protection of-
a. Hardware.
b. Software.
c. Data.
d. All of the above.

1 point

- ☐ a.
☐ b.
☐ c.
☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

14) The benefits of operational efficiency are:
a. Increased productivity
b. Resource utilization
c. Cost reduction
d. All of the above

1 point

- ☐ a.
☐ b.
☐ c.
☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

15) Which of the following solutions are not provided by Stanley Black & Decker?
a. Product assembly and engineering
b. High-quality reliable pipeline
c. Autonomous trucks
d. Equipment for construction and maintenance

1 point

- ☐ a.
☐ b.
☐ c.
☐ d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

