

Unit 13 - week 11

Course outline

How does an NPTEL online course work?

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week 11

● Lecture 54 : Concept of smart water supply systems

○ Lecture 55 : Smart Metering and sensing devices

● Lecture 56 : IoT and Automation in Water Supply

● Lecture 57 : Example of Automation and Smart Water Supply Systems

● Lecture Material

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Detailed Assignment Solution

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Assignment 11

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

Due on 2020-04-15, 23:59 IST.

1) In comparison to conventional systems, smart water supply systems:

1 point

- a) have improved performance efficiency, longevity, and reliability
- b) are more manpower intensive
- c) are costlier in both, capital cost as well as operation cost
- d) All of these are correct

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

No, the answer is incorrect.

Score: 0

Accepted Answers:

a.

2) Key elements of a smart water system, include:

1 point

- a) Communication enabled water meters and sensors, and ICT and IoT for wireless data and command transmission
- b) Data analysis and decision-making tools, and data/information dissemination platform
- c) Automated operations and control devices, and supervisory control systems
- d) All of these

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

No, the answer is incorrect.

Score: 0

Accepted Answers:

d.

3) Match the components of smart water management systems (given in column X) with illustrative example of their applications (given in column Y):

1 point

| | <i>Column X: Components</i> | <i>Column Y: Example Application</i> |
|------|--|--|
| I) | Digital output instruments | A) Asset mapping and asset management |
| II) | Supervisory control and data acquisition | B) Smart water meters installation |
| III) | Geographic information systems | C) Customer database, billing & collection |
| IV) | Software | D) Pressure management and pump optimization |

- a) I – B, II – D, III – A, IV – C
- b) I – B, II – A, III – D, IV – C
- c) I – A, II – D, III – B, IV – C
- d) I – A, II – D, III – C, IV – B

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

No, the answer is incorrect.

Score: 0

Accepted Answers:

a.

4) Which of these meters could be used to monitor flow rate and cumulative water volume passes through the meter?

1 point

- a) Positive Displacement Meters
- b) Velocity Water Meters
- c) Ultrasonic or Electromagnetic Water Meters
- d) All of these

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

No, the answer is incorrect.

Score: 0

Accepted Answers:

d.

5) Which of the following is fixed network data collection method?

1 point

- a. Meter reader physically visiting the meter site for meter reading
- b. Meter reader physically visiting to a wired display connected to meter, but located outside building, for data recording
- c. Data monitoring through wireless communication or cellular network based communication systems
- d. Data collection through radio frequency transmitter when meter reader drive past the metered buildings

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

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

6) The major difference between AMR and AMI metering systems is, that:

1 point

- a. AMR meters can automatically collect data but cannot transfer to central server, whereas AMI systems can automatically collect as well as transfer data
- b. AMR systems have one-way communication, while AMI systems usually have two-way communication
- c. AMR system usually communicates with the user, while AMI systems can communicate with users as well as with the water utility.
- d. All of the listed options

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

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

7) Read the statements below, and identify if they are true or false:
I. Smart meters and sensors can influence the water consumption and quality parameters.
II. Smart meters and sensors are tools to measure water flow or quality parameters equipped with smart (generally wire-less) communication system

1 point

- a) Statement i) is true, while statement ii) is false
- b) Statement ii) is true, while statement i) is false
- c) Both statements i) and ii) are true
- d) Both statements i) and ii) are false

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

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

8) Which among the following statements is *NOT* correct about AMR/AMI based smart metering systems?

1 point

- a. These systems offer better accuracy
- b. These systems have higher costs of meter reading
- c. These systems allow more frequent data recording and communication
- d. These systems help utility in offering better customer service

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

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

9) Which component of a SCADA system helps in decision making based on the sensor inputs (data collected) using pre-determined logic, for controlling the outputs:

1 point

- a. HMI
- b. PLC
- c. RTUs
- d. Communication Infrastructure

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

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

10) In water supply systems, SCADA is often used for:

1 point

- a. Automation of monitoring and operations at water treatment plant
- b. Pump house operations
- c. Reservoir level monitoring
- d. All of these

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

No, the answer is incorrect.

Score: 0

Accepted Answers:

d.