

B.I.E.E. 4th Yr. 2nd Semester Examination, 2023-24
SUBJECT: Industrial IoT

Figures out of the right margin indicate full marks.

Instructions: ***Candidates are required to answer any 10 (ten) from Group A to D, taking two from each group.***

Group – A (Module 1) CO1

1.
 - (a) What do you mean by Industry 4.0?
 - (b) Explain the working methodology of industrial IoT.
 - (c) State the benefits of IIoT sensors.

3 + 4 + 3 = 10

2.
 - (a) Name the nine pillars of Technological Advancement of Industry 4.0.
 - (b) Define the application areas of IIoT
 - (c) Identify at least three IIoT vendors

3 + 4 + 3 = 10

3.
 - (a) Classify Smart sensors in IIoT applications.
 - (b) What are the most common smart sensors used in IIoT?
 - (c) In IIoT, the phrase “W.A.G.E.S.” stands for?

3 + 4 + 3 = 10

[Turn over

Group - B (Module 2) CO2

4. (a) Define different types of IIoT actuators.
- (b) What is the vital role of IIoT Gateways? Describe it with a suitable diagram.
- (c) Why is "Sushi" sensor so much popular in IIoT?
 $3 + (2+3) + 2 = 10$

5. (a) What is "Digital Twin" and how does it connect with IIoT?
- (b) Why will you prefer MQTT in IIoT rather than HTTP?

$(4 + 3) + 3 = 10$

6. (a) Name the IIoT enables technologies.
- (b) State the reasons of using 5G in IIoT.
- (c) What are the largest threats of IIoT?

$4 + 3 + 3 = 10$

Group C (Module 3)CO3

7. (a) What are the attributes of a M2M communication network?
(b) How is the CoAP protocol different from the HTTP RESTful API?
(c) What benefit does real-time scheduling provide in the case of LoRa networks?
4 + 3 + 3 = 10
8. (a) "MQTT is the Lightweight messaging protocol for M2M communication"
- explain the term "light weight".
(b) State the benefits of IIoT sensors.
(c) Distinguish Bluetooth from Zigbee.
2 + 4 + 4 = 10
9. (a) What is LPWAN? Why does it become popular day by day?
(b) Describe the features of LoRa with a suitable diagram.
(c) Compare LoRa to WiFi.
(2+2)+3+3=10

Group - D (Module 4) C04

10. (a) Describe the IIoT solutions to avoid traffic congestions.
(b) Illustrate the impact of IIoT for public safety in Smart City.
(c) Name at least five aspects of IoT technology to build a Smart home.

3 + 3 + 4 = 10

11. (a) State the concept of intelligent car parking system.
(b) Name a few wearable devices of IoT in Healthcare and describe any one of them.

3 + (4 + 3) = 10

12. (a) Which type of surgical tools are used robotic surgeries?
(b) Distinguish Cloud computing from Fog computing.
(c) Explain the advantages of using IoT in healthcare.

2 + 4 + 4 = 10