



B.E/B.TECH DEGREE EXAMINATIONS: NOV /DEC/2023

(Regulation 2018)

Sixth Semester

COMMON TO ALL BRANCHES

U18CSR6004: Industrial IoT

COURSE OUTCOMES

CO1: Understand business models and reference architectures for IIOT.

CO2: Illustrate the importance of key enablers of industrial IIOT.

CO3: Describe the importance of Digital Twin and its benefits.

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

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|---|-----|-------------------|
| 1. Examine how IOT in smart office helps better productivity. | CO1 | [K ₂] |
| 2. Is this the term IIOT new? Justify your answer. | CO1 | [K ₂] |
| 3. Summarize the viewpoints in Industrial internet. | CO1 | [K ₂] |
| 4. Illustrate the major industries in the Industrial Revolution. | CO1 | [K ₂] |
| 5. How HMI relates to IIoT systems? Mention the key components of it. | CO2 | [K ₂] |
| 6. Enlist the benefits of adopting an industry 4.0 model. | CO2 | [K ₂] |
| 7. State the need of digital twin in industry 4.0. | CO3 | [K ₂] |
| 8. Differentiate between Robotization and automation. | CO2 | [K ₂] |
| 9. Compare and contrast between digital thread and digital twin. | CO3 | [K ₂] |
| 10. Classify the types of digital twin based on its characteristics. | CO3 | [K ₂] |

Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

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|--|---|-----|-------------------|
| 11. a) Explain various trends in Information and communication technologies and its impact on IoT. | 8 | CO1 | [K ₂] |
| b) Demonstrate the understanding of sensors with respect to IoT. Explain in detail about various types of sensors. | 8 | CO1 | [K ₂] |
| 12. a) Outline in brief about the challenges in addressing the IIoT business models and also list the opportunities in IIoT. | 8 | CO1 | [K ₂] |

- b) With neat sketch, explain the architecture of Industrial Internet Reference Architecture (IIRA). 8 CO1 [K₂]
13. a) Describe in detail about the sensors used in Air Quality Monitoring and Alert Systems with its advantages and disadvantages. 8 CO2 [K₂]
- b) Illustrate the operations of the following industrial control systems PLC, DCS and SCADA. How SCADA control system is different from PLC and DCS? 8 CO2 [K₂]
14. a) Describe any 3 Applications of AI in INDUSTRY 4.0 (IIOT). Explain the application of IIOT in Smart Logistics Management in detail. 8 CO2 [K₂]
- b) Demonstrate the main objective of IIoT in manufacturing and other industrial process. 8 CO2 [K₂]
15. a) Design and explain the architecture to plant security and safety for health care in a hospital where Covid situation must be controlled via IoT. 8 CO2 [K₂]
- b) Discuss in detail about different technological pillars of Industry 4.0. 8 CO3 [K₂]
16. a) Write the steps involved in product life cycle of digital twin and explain different use cases involved in it. 8 CO3 [K₂]
- b) Elaborate the building blocks and characteristics of digital twin platform and describe smart applications will illustrative examples. 8 CO3 [K₂]
