

Time : 3 Hours

Total Marks: 80

N.B.:

1. Question No.1 is compulsory.
2. Out of the remaining five questions attempt any three questions.
3. Assume suitable data if required and state it clearly.
4. Figures in brackets to the right indicate full marks.

- 1 Attempt any FOUR (20)
 - a Define Industrial Internet of Things (IIoT). How does it differ from traditional IoT. (5)
 - b Define Cyber-Physical Systems (CPS). How do they integrate physical processes with computational elements? (5)
 - c Explain the role of a gateway in IoT web connectivity. How does it facilitate communication between devices and the cloud? (5)
 - d What does the logical design of IoT entail? (5)
 - e Difference between IoT and M2M (5)
- 2 a Present a case study of a successful Smart Factory implementation. Discuss the objectives, technologies used, challenges faced, and outcomes achieved. (10)
b Discuss the concept of RESTful services. How do they differ from traditional web services, and what are their advantages in IoT? (10)
- 3 a Explain the LoRa (Long Range) technology. What are its key features and typical use cases in IoT deployments? (10)
b Discuss the functional blocks of an IoT system. Provide an overview of each block and its significance in the IoT ecosystem. (10)
- 4 a Present a case study highlighting IoT applications in the retail sector. Discuss the value created through IoT technologies and any challenges faced during implementation. (10)
b Explain COAP and MQTT architectures and differentiate between them (10)
- 5 a What role does AI play in Industry 4.0? Provide examples of how AI enhances manufacturing processes and decision-making. (10)
b What are the key technological components that make AR and VR possible? Discuss the role of hardware and software in both technologies. (10)
- 6 a Explore emerging trends in Industry 4.0 and IIoT. How are advancements in AI, machine learning, and data analytics shaping the future of industrial operations? (10)
b Explain the SIGFOX technology. What are its unique features, and how does it support low-power, wide-area communication? (10)
