

Duration: 3hrs

[Max Marks:80]

- N.B. :** (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

- 1 **Attempt any FOUR.** [20]
- a Compare Physical Design of IoT and Logical Design of IoT
 - b What is the function of Apache Spark?
 - c Explain how MapReduce is used for batch data analysis.
 - d Explain how Apache Hadoop is useful for data management
 - e Explain the Publish-Subscribe Communication Model.
- 2 **Attempt the following**
- a Explain Cyber Physical Systems in relation to Industry 4.0. [10]
 - b Describe how healthcare applications function in IIOT [10]
- 3 **Attempt the following**
- a Explain the architectures of COAP and MQTT in detail, highlighting their differences. [10]
 - b Explain in detail the IIOT Architecture. [10]
- 4 **Attempt the following**
- a How is Sigfox connectivity technology used for IoT? [10]
 - b Explain the design challenges and solutions of the IoT for Industry 4.0. [10]
- 5 **Attempt the following**
- a Explain SOAP and REST architectures and differentiate between them [10]
 - b Discuss the role of artificial intelligence in Industry 4.0.. [10]
- 6 **Attempt the following** [20]
- a Explain Human machine Interaction in Industry 4.0
 - b Explain NBIoT protocol in detail with example