

Time: 3 Hours

Max. Marks: 80

Instructions:

- 1) **Question Number 1** is compulsory.
- 2) Solve any **three** questions out of remaining **five** questions.
- 3) Each Question carry 20 marks.
- 4) Illustrate your answers with neat sketches wherever necessary.
- 5) Figures to the right indicate full marks.
- 6) Assume suitable additional data, if necessary and clearly state it.
- 7) All sub-questions of the same question should be grouped together.

Q.1 Answer any four.

- (a) Give the any five applications of IoT. **05**
- (b) Give the advantages and disadvantages of NB-IoT. **05**
- (c) With suitable parameters compare CoAP with MQTT protocol. **05**
- (d) Explain similarities and differences of IoT and IIoT. **05**
- (e) Describe the data retention strategy in IoT. **05**

- Q.2**
- (a) Compare with suitable parameters Fog computing with Edge computing. **05**
 - (b) Give the IT and OT Responsibilities in the IoT Reference Model. **05**
 - (c) Explain the role of Bluetooth Low Energy (BLE) in IoT and differentiate between Zigbee and Z-wave. **10**

- Q.3**
- (a) Explain the complex flows between HTTP and MQTT in IoT applications. **05**
 - (b) What is WebSocket and how it works? **05**
 - (c) What is IoT data analytics? Explain different types of IoT Data Analytics. **10**

- Q.4**
- (a) Explain various IoT Communication Models considering Logical Design of IoT. **05**
 - (b) Explain the characteristics of Smart object. **05**
 - (c) Explain how IoT can be used for smart parking in a city. **10**

- Q.5**
- (a) Explain the Core IoT functional stack: Data Analytics versus Business Benefits. **05**
 - (b) Considering the Core IoT Functional Stack Layer 3 - Applications and Analytics Layer, describe following terms i) Analytics application and ii) Network analytics. **05**
 - (c) Describe the key features of 6LoWPAN. Give the comparison of an IoT Protocol Stack Utilizing 6LoWPAN and an IP Protocol Stack. **10**

- Q.6**
- (a) Explain STOMP Architecture protocol in IoT. **05**
 - (b) Give the benefits and drawbacks of AMQP protocol. **05**
 - (c) Explain the key principles of Visualization and Dashboarding-Designing visual analysis for IoT data in applications. **10**