

[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** (a) Define IoT and Give Characteristics of IoT. **05**
- (b) Compare IoT access cellular technologies Long-Term Evolution (LTE) and Long-Term Evolution Advanced (LTE-A) using suitable specifications parameters. **05**
- (c) How QoS is maintained in the MQTT protocol. **05**
- (d) Discuss the application of IoT in Cities. **05**
- Q.2** (a) Give the function of each layer of the IoT World Forum (IoTWF) standardized architecture. **10**
- (b) What is RFID (radio frequency identification)? How does RFID work? Compare active RFID and passive RFID with suitable parameters. **10**
- Q.3** (a) Compare with suitable parameters CoAP with AMQP. **10**
- (b) What do we mean by elastic analytics? Explain the core elastic analytics concepts with respect to IoT Analytics for the Cloud. **10**
- Q.4** (a) What is meaning of Smart object? Explain the characteristics of Smart object. Give the trends in smart objects. **10**
- (b) Describe the application of IoT in Environment. **10**
- Q.5** (a) Explain the Smart Things: architectural classification considering Layer 1 Things-Sensors and Actuators Layer. **10**
- (b) Explain the protocol stacks utilizing IEEE 802.15.4 standards. Enlist the advantages and disadvantages of IEEE 802.15.4 standards. **10**
- Q.6** (a) What is Simple (or Streaming) Text Oriented Message Protocol (STOMP)? Explain the STOMP commands that are used for communication between clients and servers in message-oriented middleware systems. **10**
- (b) What is IoT data analytics? Explain different Types of IoT Data Analytics. **10**