(2 ½ Hours) [Total Marks: 75]

N.B. 1) All questions are compulsory.
2) Figures to the right indicate marks.
3) Illustrations, in-depth answers and diagrams will be appreciated.
4) Mixing of sub-questions is not allowed.

Q. 1 Attempt All (Each of 5 Marks) **(15M)**

(a) Multiple Choice Questions

1. MQTT stands for _____

a. MQ Telemetry Things b. MQ Transport Telemetry

c. MQ Transport Things d. MQ Telemetry Transport

2. CoAP is specialized in _____

a. Internet applications b. Device applications

c. Wireless applications d. Wired applications

3. What is the role of Bigdata in smart grid architecture of IoT?

a) Store data b) Manage data

c) Collect data. d) Security.

4. Which is open standard?

a) HTTP b) MQTT

c) XMPP d) UDP

5. MQTT is better than HTTP for sending and receiving data.

a) True b) False

TURN OVER

(b) Fill in the blanks
{ **Full-duplex , 10 , secure , M2M Gateway, SPI, 5 , Protocol abstraction**}

1) Secure digital card application uses _____protocol.
2) DASH7 provides multi-year battery life, range of up to ___ km.
3) IoT gateway must provide _____.
4) The_____ contains M2M Applications and M2M Service Capabilities.
5) In _____communication occurs from sender to receiver and receiver to sender at same time.

(c) Explain in Brief
1) What are applications of IoT?
2) Define topology?
3) Why different protocols are defined?
4) Define Protocol?
5) Are Amazon, Ola are part of IoT?

Q. 2 Attempt the following (Any THREE) (15M)

(a) Write a short note on:
a. Device Domain b. Gateway Domain

(b) Write a short not on basic IoT architecture.

(c) Explain with neat labelled diagram, service capabilities of M2M

(d) List and explain the Functional layers and capabilities of an IoT solution.

(e) Write a short note on IoT reference Architecture with block diagram.

(f) Explain safety, privacy, trust, security in IoT reference Model.

Q. 3 Attempt the following (Any THREE) (15M)

(a) Discuss the working of ZigBee and its topologies with devices.

(b) Write a short note on Wireless HART.

(c) Compare Ipv4 and IPv6.

(d) Write a short note on DHCP with its applications in IoT.

(e) Write a short note on 6LoWPAN with its functions and characteristics.

(f) Write a short note on CARP and its use in IOT application.

TURN OVER

Q. 4 Attempt the following (Any THREE) **(15 M)**

(a) Differentiate between TCP and MPTCP.

(b) How UDP works? Explain with an example.

(c) Discuss request and response architecture of HTTP.

(d) Explain basic operations available in MQTT.

(e) Discuss in brief working of OMA.

(f) How BBF helps to overcome the challenges faced by different Organizations?

Q. 5 Attempt the following (Any THREE) **(15 M)**

(a) How ITU-T IoT reference model works?

(b) Explain in brief the design principles that should be considered while designing the architecture of IOT.

(c) Write a short note on 6TiSCH.

(d) What are RPL protocols? Discuss few applications of this protocol.

(e) Write a short note on AMQP and its working.

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