

(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. IoT-A stands for \_\_\_\_\_
  - a) Internet of Things Address
  - b) Internet of Things Architecture
  - c) Internet of Things Area
  - d) Industrial of things Architecture
2. What is the Ethernet/LAN cable used in RPi?
  - a) Cat5
  - b) Cat5e
  - c) Cat6
  - d) RJ45
3. What is the default user in Debain on Raspberry Pi?
  - a) Default
  - b) User
  - c) Pi
  - d) Root
4. Gyroscope is used for \_\_\_\_\_
  - a) Anti-theft
  - b) Capacitive proximity sensing
  - c) Gaming
  - d) Angle detection
5. Data in network layer is transferred in the form of \_\_\_\_\_
  - a) Layers
  - b) Packets
  - c) Bytes
  - d) Bits

**(b) Fill in the blanks**

( personal, private, IPv4, IPv6, auto repeat request, auto repeat question, 3, 6, TCP, UDP)

1. In 6 LoWPAN, P stands for.....
2. 32 bit IP addressing is in .....
3. ARQ stands for .....
4. Gyro Sensor MPU 6050 collects ..... axis rotation data.
5. Voice & Data transmission is governed by ..... protocol.

(c) **Explain in Brief**

1. Define IoT. Explain architecting means in IoT.
2. Full form of IEEE.
3. In 6LoWPAN, 6 stand for what?
4. Explain, why low energy architecture needed for IoT?
5. State some applications of IoT& justify why it is IoT?

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

- (a) Explain in brief the design principles that should be considered while designing the architecture of IOT.
- (b) Explain with block diagram the IOT Functional model.
- (c) Discuss features of ETSI M2M high level architecture with diagram.
- (d) Explain different M2M service capabilities with example.
- (e) How ITU-T IoT reference model works?
- (f) Discuss the following in brief
  - Sensors
  - RFID Tags

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

- (a) Explain in short RPL and CORPL. What is the difference between these protocols?
- (b) Discuss the working of ZigBee and its topologies with devices.
- (c) Write a short note on 6LoWPAN with its functions and characteristic.
- (d) Write a short note on DHCP with its applications in IoT.
- (e) What are the difference between IPv4 and IPv6 protocol?
- (f) Write a short note on wireless HART.

**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) Discuss different types of actors associated in MQTT protocol.
- (e) How XMPP helps in communication between two nodes/devices?
- (f) Discuss in brief working of OMA.

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

- (a) What are the objectives of IoT architecture?
- (b) Explain ideology “From IoT architecture to system Solution” with one example.
- (c) Discuss architecture and application of DASH7 protocol.
- (d) Explain Bluetooth low energy protocol with reference to data transmission.
- (e) Write a short note on AMQP and its working.

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