Printed Page:-03 **Subject Code**:- **ACSIOT0601**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: VI - THEORY EXAMINATION (2024.- 2025)

Subject: IoT Protocols & Its Applications

Time: 3 Hours **Max. Marks: 100**

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

1. *This Question paper comprises of* ***three Sections -A, B, & C.*** *It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*

2. *Maximum marks for each question are indicated on right -hand side of each question.*

3. *Illustrate your answers with neat sketches wherever necessary.*

4. *Assume suitable data if necessary.*

5. *Preferably, write the answers in sequential order.*

6. *No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.*

SECTION-A 20

1. Attempt all parts:-

1-a. Which is an IOT Layer? (CO1, K1) 1

(a) Session Layer
(b) Data-link Layer
(c) Business Layer
(d) None of the above

1-b. Network Layer is Used for_____. (CO1, K1) 1

(a) Data Collection
(b) Data Transport
(c) Process Information
(d) System Management

1-c. Standard ports of MQTT protocol are _____ (CO2, K1) 1

(a) I2C
(b) SSL
(c) USART
(d) TCP/IP

1-d. which protocol provides Dynamic Discovery ? (CO2, K1) 1

(a) XMPP
(b) CoAP
(c) DDS

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(d) AMQP

1-e. IPSec is designed to provide security at the _____ (CO3, K1) 1

(a) Transport layer
(b) Network layer
(c) Application layer
(d) Session layer

1-f. EIGRP metric is (CO3, K1) 1

(a) K-values
(b) Bandwidth only
(c) Hop Count
(d) Delay only

1-g. In which RFID tag, the range is less? (CO4, K1) 1

(a) Active
(b) Semi-passive
(c) Passive
(d) None of these

1-h. The data rate of LORA is (CO4, K1) 1

(a) 50 kbps
(b) 500 kbps
(c) 300 Mbps
(d) None of these

1-i. In Blynk protocol every message consists of _____ parts. (CO5, K1) 1

(a) 1
(b) 2
(c) 3
(d) 4

1-j. MQTT is mainly used for _____ (CO5, K1) 1

(a) M2M Communication
(b) Device Communication
(c) Internet Communication
(d) Wireless Communication

2. Attempt all parts:-

2.a. Explain work of Middleware Layer in brief. (CO1, K1) 2

2.b. What is Direct exchange in AMQP? (CO2, K1) 2

2.c. What is ICMP? (CO3, K1) 2

2.d. What is the speed of 6LoWPAN? (CO4, K1) 2

2.e. What is the default domain for Blynk? (CO5, K1) 2

SECTION-B 30

3. Answer any five of the following:-

3-a.	Explain about Raspberry pi operating system. (CO1, K1)	6
3-b.	Explain OSI Model layers. (CO1, K1)	6
3-c.	Describe Data centric publish and subscribe(DCPS) and dynamic DSI. (CO2, K1)	6
3-d.	Enlighten the statement "CoAP is a M2M protocol based on Request and Response model of HTTP". (CO2, K1)	6
3.e.	Explain the various message types along with their type value numbers of IGMP. (CO3, K1)	6
3.f.	Discuss the various security modes of IEEE802.15.4. (CO4, K1)	6
3.g.	Why is virtual pin used in Blynk? Explain with example. (CO5, K1)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Draw and explain IoT Layered Architecture in detail. (CO1, K2)	10
4-b.	Define AMQP protocol and elaborate any one use case of AMQP protocols (CO1, K2)	10

5. Answer any one of the following:-

5-a.	Discuss the architecture and features of XMPP protocol. (CO2, K2)	10
5-b.	Compare MQTT, AMQP, DDS and CoAP protocols. (CO2, K2)	10

6. Answer any one of the following:-

6-a.	Discuss the working, advantages, disadvantages and applications of IPV6. (CO3, K2)	10
6-b.	Discuss the working, advantages, disadvantages and applications of IGMP. (CO3, K2)	10

7. Answer any one of the following:-

7-a.	What are IEEE 802 wireless standards? Why IEEE 802 standards are important? (CO4, K2)	10
7-b.	Describe the working principle, advantages, disadvantages and applications of a Z-wave. (CO4, K2)	10

8. Answer any one of the following:-

8-a.	How can we read and publish data in Thingspeak? Please write all the steps. (CO5, K2)	10
8-b.	Describe the CoAP message format and mention size of header used in the CoAP message. (CO5, K2)	10