Printed Page:- **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 (20.....- 20.....)

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. Identify Fastest protocol Among below. (CO1,K1) 1

(a) Bluetooth
(b) RFID
(c) LPWAN
(d) Wi-Fi

1-b. Identify Longest range protocol Among below. (CO1, K1) 1

(a) Bluetooth
(b) RFID
(c) LPWAN
(d) Wi-Fi

1-c. Identifies three foremost additives of MQTT. (CO2, K1) 1

(a) Server, publisher and broker
(b) Server, client and application
(c) subscriber, client and application
(d) subscriber, publisher, and dealer

1-d. CoAP provides which of the following requirements? (CO2, K1) 1

(a) Multicast support and simplicity
(b) Low overhead and multicast support
(c) Simplicity and low overhead

(d) Multicast support, Low over head, and simplicity

1-e. Which of the following field in IPv4 datagram is not related to fragmentation? (CO3, K1) 1

(a) Flags
(b) Offset
(c) TOS
(d) Identifier

1-f. Administrative distance for internal EIGRP is _____ (CO3, K1) 1

(a) 90
(b) 170
(c) 110
(d) 91

1-g. In which frequency range does the RFID system operate? (CO4, K1) 1

(a) High frequency
(b) Low frequency
(c) Ultra-high frequency
(d) All of the mentioned

1-h. Which of the following is not a characteristic of a Zigbee network? (CO4, K1) 1

(a) Low power consumption
(b) Easy installation
(c) High data rates
(d) Unlicensed radio bands

1-i. The programming languages used in Blynk are (CO5, K1) 1

(a) Python
(b) C/C++
(c) Java
(d) All of the mentioned

1-j. The messaging nodes of CoAP are (CO5, K1) 1

(a) Confirmable and Non confirmable
(b) Acknowledgement
(c) Reset
(d) All of the mentioned

2. Attempt all parts:-

2.a. What is Data Accumulation Middleware Layer? (CO1, K1) 2

2.b. What do you understand by decentralized in XMPP? (CO2, K1) 2

2.c. What is the port number of IGMP? (CO3, K1) 2

2.d. What is role of slave nodes in Z- wave? (CO4, K1) 2

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2.e.	What is the IP address of Blynk? (CO5, K1)	2

SECTION-B 30

3. Answer any five of the following:-

3-a.	Write any six applications of IOT protocols. (CO1, K1)	6
3-b.	Describe the learning board of Raspberry Pi 3 with key components. (CO1, K1)	6
3-c.	What is QoS in IoT application protocols? Which IoT protocols provides QoS and which does not? (CO2, K1)	6
3-d.	What are the differences between Confirmable, Non-confirmable, Piggyback and Separate messaging in CoAP? (CO2, K2)	6
3.e.	Discuss the differences between Router LSA OSPF and Network LSA OSPF. (CO3, K2)	6
3.f.	Discuss the differences between passive communication NFC and active communication NFC. (CO4, K2)	6
3.g.	How do we find the authentication token in Blynk? (CO5, K2)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Compare and contrast the layered architecture of the Internet of Things (IoT) with the OSI model layers. (CO1, K2)	10
4-b.	A healthcare startup wants to create a wearable device that monitors heart rate and transmits alerts to doctors when abnormalities are detected. Discuss which IoT protocols and architecture layers are essential for ensuring timely and reliable communication in this use case. (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.	A university is building a smart classroom setup where sensors detect room occupancy and environmental conditions and update a cloud dashboard. Evaluate which application layer protocol (CoAP, HTTP, or MQTT) is most appropriate for such an environment and justify your choice. (CO2, K2)	10

6. Answer any one of the following:-

6-a.	"UDP is an unreliable transport protocol". Justify! this statement with suitable examples. (CO3, K2)	10
6-b.	Discuss the significance of ICMP and IGMP in supporting efficient communication and management within IP networks. (CO3, K2)	10

7. Answer any one of the following:-

7-a.	Describe the working principle, advantages, disadvantages and applications of a HART. (CO4, K2)	10
7-b.	Explore the features and applications of NFC technology for secure proximity-based communication and contactless transactions in mobile payments, access control, and smart packaging. (CO4, K2)	10

8. Answer any one of the following:-

8-a.	Describe the monitoring of a smart farm with a Blynk IoT platform. (CO5, K2)	10
8-b.	"CoAP is a smart solution for enabling M2M applications". Justify! this statement with the help of good examples. (CO5, K2)	10

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