Printed Page:- 04 **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 (2023 - 2024)

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. How many host can be connected in Class-C IPv4? (CO1) 1

(a) 2^8

(b) 2^16

(c) 2^24

(d) 2^32

1-b. ESP (Encapsulation Security Payload) and AH (Authentication Header) are the part of _____ protocol. (CO1) 1

(a) IPsec

(b) ICMP

(c) IGMP

(d) EIGRP

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

(a) Server, publisher and broker

(b) Server, client and application

(c) subscriber, client and application

(d) subscriber, publisher, and dealer

1-d. CoAP is specialized in _____ (CO2) 1

(a) Internet applications

(b) Device applications

(c) Wireless applications

(d) Wired applications

1-e. Which field helps to check rearrangement of the fragments? [CO3] 1

(a) Offset

(b) Flag

(c) TTL

(d) Identifier

1-f. The header length of an IPv6 datagram is _____. [CO3] 1

(a) 10 bytes

(b) 25 bytes

(c) 30 bytes

(d) 40 bytes

1-g. What is the typical range of transmission distance in a Zigbee network? [CO4] 1

(a) 5m

(b) 50m

(c) 500m

(d) 5Km

1-h. 6LoWPAN Adaption layer contains_____. [CO4] 1

(a) Header compression

(b) Fragmentation

(c) Layer 2 forwarding

(d) All of the mentioned

1-i. The three major components of blynk are_____. [CO5] 1

(a) Blynk App

(b) Blynk Server

(c) Blynk Libraries

(d) All of the mentioned

1-j. MQTT is _____ oriented. [CO5] 1

(a) Data

(b) Message

(c) Network

(d) Device

2. Attempt all parts:-

2.a.	Explain work of Network Layer in brief. (CO1)	2
2.b.	Explain publish - subscribe model in brief. (CO2)	2
2.c.	Define OSPF? [CO3]	2
2.d.	Name the various layers used in Z-wave. [CO4]	2
2.e.	What type of data is accepted by Thingspeak? [CO5]	2

SECTION B **30**

3. Answer any <u>five</u> of the following:-

3-a.	Explain about Raspberry pi operating system. (CO1)	6
3-b.	Explain Raspberry Pi GPIO and write a Rpi program for LED blink. (CO1)	6
3-c.	What is Dynamic discovery and global data space in DDS? (CO2)	6
3-d.	Enlighten the statement "CoAP is a M2M protocol based on Request and Response model of HTTP". (CO2)	6
3.e.	Discuss the various features of EIGRP. [CO3]	6
3.f.	Discuss the differences between master slave and multi master mode of operation of HART. [CO4]	6
3.g.	Describe the use of widgets in Thingspeak channel. [CO5]	6

SECTION C **50**

4. Answer any <u>one</u> of the following:-

4-a.	Explain Use cases of any IOT protocols. (CO1)	10
4-b.	Explore the Raspberry pi Learning Board (CO1)	10

5. Answer any <u>one</u> of the following:-

5-a.	Write MQTT features and Explain its Architecture. (CO2)	10
5-b.	Write Short notes on:- i) CoAP Message Types ii) CoAP Request-Response Model (CO2)	10

6. Answer any <u>one</u> of the following:-

6-a.	With the help of neat sketches explain the various stages of OSPF. [CO3]	10

6-b.	With the help of neat sketches explain the packet sturcture of IPV4 with all details. [CO3]	10

7. Answer any <u>one</u> of the following:-

7-a.	Describe the working principle, advantages, disadvantages and applications of a IEEE802.15.4. [CO4]	10
7-b.	Describe the working principle, advantages, disadvantages and applications of a NFC. [CO4]	10

8. Answer any <u>one</u> of the following:-

8-a.	With the help of neat skectches describe the home automation system with Blynk app. [CO5]	10
8-b.	With the help of neat sketches explain the main components of a smart city. [CO5]	10