Printed Page:- 04 **Subject Code:- AEC0403**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B. Tech

SEM: IV - THEORY EXAMINATION - (2023 - 2024)

Subject: Internet of Things

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. Who coined the term "Internet of Things"? (CO1) 1

(a) Kevin Ashton

(b) John Wright

(c) Edward Jameson

(d) George Garton

1-b. Which of the following is not an application of IoT? (C01) 1

(a) Wearables

(b) Smart Grid

(c) Arduino

(d) Smart City

1-c. Fog computing can be perceived in _____ and _____.(CO2) 1

(a) Big data and Cloud systems

(b) Big data and IoT

(c) Cloud systems and IoT

(d) Big data, Cloud systems and IoT

1-d. When the processor is executing in ARM state, then all instructions are _____ wide. (CO2) 1

(a) 8 bits

(b) 16 bits

(c) 32 bits

(d) 64 bits

1-e. Which library is used to access I2C in Arduino IoT devices? (CO3) 1

(a) EEPROM

(b) Wire

(c) DHT11

(d) ArduinoJson

1-f. How can we connect the power supply to Raspberry Pi? (CO3) 1

(a) USB connection

(b) Internal battery

(c) Charger

(d) Adapter

1-g. Standard ports of MQTT are _____. (CO4) 1

(a) I2C

(b) SSL

(c) USART

(d) TCP/IP

1-h. The communication range in NFC is _____ (CO4) 1

(a) <20cms

(b) >20cms

(c) >40cms

(d) >60cms

1-i. Out of the following which is not the element of threat modelling? (CO5) 1

(a) Asset

(b) Vulnerability

(c) Threat

(d) Time

1-j. Microsoft's Threat Modelling tool uses _____ threat classification scheme. 1

(CO5)

(a) VAST

(b) STRIDE

(c) Trike

(d) PASTA

2. Attempt all parts:-

2.a.	Mention the two risks that emerges with IoT adoption. (CO1)	2
2.b.	What do you mean by ARM embedded processors? (CO2)	2
2.c.	What is the main use of memory card in Raspberry Pi? (CO3)	2
2.d.	What is MQTT?(CO4)	2
2.e.	What is Code Signing? (CO5)	2

SECTION B **30**

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

3-a.	Define user interface and explain in detail with examples. (CO1)	6
3-b.	Explain TCP/IP layer model with diagram. (CO1)	6
3-c.	Explain the differences between public, private and community cloud deployment models. (CO2)	6
3-d.	Discuss the advantages and disadvantages of ARM Cortex M4.(CO2)	6
3.e.	Explain the differences between magnetic, solid state and optical memory. (CO3)	6
3.f.	Explain Zigbee technology and write down its various applications.(CO4)	6
3.g.	What is the role and benefits of machine learning in IoT? (CO5)	6

SECTION C **50**

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

4-a.	Describe the various opportunities and risks that emerge with IoT adoption,. (CO1)	10
4-b.	What is IoT? Explain the various key elements of an IoT device. Also highlight the evolution of IoT. (CO1)	10

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

5-a.	Explain how gateways are used for data management, local applications and device management in IoT. (CO2)	10
5-b.	Draw the three layer IoT architecture and explain the function of each layer in detail. (CO2)	10

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

6-a.	Draw the diagram of Raspberry Pi 4 model B and explain its working.(CO3)	10
6-b.	Write the different techniques in IoT that can be used to save energy. Explain any two of them.(CO3)	10

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

7-a.	Define RFID tag and RFID reader. Also write down the various features and specifications of RFID. (CO4)	10
7-b.	What is Interfacing? Explain NFC and its interfacing with any development board. (CO4)	10

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

8-a.	Explain the principles of encryption and its need in IoT. (CO5)	10
8-b.	Illustrate the role of Platform Security Architecture in IoT and its different phases. (CO5)	10