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 CARRY OVER THEORY EXAMINATION - AUGUST 2023

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. _____ in the IoT Architecture is the hardware and software gateways that analyze and pre-process the data before transferring it to the cloud. (CO1) 1

(a) Data center

(b) Edge IT

(c) Gateways

(d) Data Acquisition

1-b. The main key components of an IoT are (CO1) 1

(a) Sensor / Devices

(b) Connectivity

(c) Data processing and user interface

(d) All of these

1-c. Fog computing is also known as (CO2) 1

(a) Foggmentation

(b) Cloud computing

(c) Edge computing

(d) None of these

1-d. What is the standard form of ARM? (CO2) 1

(a) Automatic RISC motor

(b) Automatic RISC machine

(c) Advanced RISC machine

(d) None of these

1-e. The chip by which both the operation of read and write is performed is known as (CO3) 1

(a) RAM

(b) ROM

(c) PROM

(d) EPROM

1-f. Galileo Gen 2 board was developed by which company (CO3) 1

(a) Atmel

(b) Intel

(c) Motorola

(d) Dallas

1-g. MQTT is _____ oriented. (CO4) 1

(a) Data

(b) Message

(c) Network

(d) Device

1-h. Which protocol has URI and content type support feature? (CO4) 1

(a) SPI

(b) UDP

(c) HTTP

(d) CoAP

1-i. What do you call the security discipline that requires that a user is given no more privileges necessary to perform his or her job? (CO5) 1

(a) Defence in Depth

(b) Risk transfer

(c) Principle of least privilege

(d) Reduction of attack surface

1-j. The core element of architecture of smart city is_____. (CO5) 1

(a) Mobile Unified Service

(b) Urban Application Platform

(c) Management center

(d) Integrated Information Provider

2. Attempt all parts:-

2.a. Define M bed operating system. (CO1) 2

2.b. What do you mean by gateway? (CO2) 2

2.c. How much RAM does an Arduino Uno have? (CO3) 2

2.d. Explain how RFID works ? (CO4) 2

2.e. Why IoT security is important? (CO5) 2

SECTION B **30**

3. Answer any five of the following:-

3-a. Describe the main technologies that enable IoT. (CO1) 6

3-b. Explain the uses of M bed operating system in an IoT application. (CO1) 6

3-c. Discuss the various functions that are performed by business layer. (CO2) 6

3-d. Explain the role of gateways in fog architectures of IoT. (CO2) 6

3.e. Discuss the advantages and disadvantages of Raspberry Pi. (CO3) 6

3.f. Explain AMQP? Write down its three features. (CO4) 6

3.g. What is the role and benefits of artificial intelligence in IoT? (CO5) 6

SECTION C **50**

4. Answer any one 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 one of the following:-

5-a. With the help of neat diagram Discuss the five layered architecture model of IoT. Explain the importance of this model. (CO2) 10

5-b. What are the different Arm processor families? Describe the various features of Arm-cortex - M4 processor. (CO2) 10

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

6-a. What is the basic principle of sensor? Describe any one technique for analog to digital conversion. (CO3) 10

6-b. Discuss the differences between (CO3) 10
(i) Arduino Uno and Raspberry Pi
(ii) Primary memory and Secondary memory

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

7-a. Explain the working of LI-FI with suitable diagram. Also write down its five applications.(CO4) 10

7-b. Describe the working, advantages, disadvantages and applications of Bluetooth technology with a suitable example. (CO4) 10

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

8-a. What is threat modelling ? Discuss the basic principle of encryption. What are the differences between symmetric and asymmetric encryption? (CO5) 10

8-b. Describe the role of Platform Security Architecture in IoT. Also explain the role of IoT for making a smart city. (CO5) 10