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 (2022-2023)
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.   When was the actual term "Internet of Things" coined? (CO1)   1

        (a) 1998

        (b) 1999

        (c) 2000

        (d) 2002

1-b.   An IoT network is a collection of _____ devices. (CO1)   1

        (a) Signal

        (b) Machine to Machine

        (c) Interconnected

        (d) Network to Network

1-c.   The ARM Cortex M4 MCU contains   (CO2)   1

        (a) 32 KB RAM

        (b) 256 KB Flash Memory

        (c) 2 KB EEPROM

1-d.   According to the analysis on IoT application framework, smart grid is divided   1
into ………   (CO2)

       (a) 2 layers

       (b) 3 layers

       (c) 4 layers

       (d) 5 layers

1-e.   Power supply is done in Raspberry Pi by   (CO3)   1

       (a) USB connection

       (b) Internal battery

       (c) Charger

       (d) Adapter

1-f.   What does p refer to in ATmega328p?   (CO3)   1

       (a) Production

       (b) Pico-Power

       (c) Power-Pico

       (d) Programmable on chip

1-g.   Which among these are the components of MQTT Protocol_____   (CO4)   1

       (a) Subscriber

       (b) Broker

       (c) Publishers

       (d) All of the above

1-h.   Which layer is CoAP   (CO4)   1

       (a) Control layer

       (b) Transport layer

       (c) Service layer

       (d) Application layer

1-i.   In order to improve their competitiveness and services assurance, the _____   1
require independently funded IoT projects. (CO5)

       (a) e-Government related

       (b) Enterprise-based

       (c) Company based

       (d) Business oriented platform

1-j. What is the first line of defence when setting up a network?   (CO5)   1

       (a) Physically secure a network

       (b) Configure an authentication

       (c) Configure encryption

       (d) Configure an ACL

2. Attempt all parts:-

2.a. Write an application of M bed operating system.   (CO1)   2

2.b. Define reference architecture of IoT. (CO2)   2

2.c. What do you mean by ROM? (CO3)   2

2.d. Why do we need E-Health? (CO4)   2

2.e. Describe two factors that will fuel the future adoption of IoT technology. (CO5)   2

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SECTION B   30

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

3-a. What are the various key challenges facing by an IoT system?   (CO1)   6

3-b. What is the concept of IoT? Explain with the help of a suitable diagram. (CO1)   6

3-c. Discuss the three main approaches of client / external communication layer. (CO2)   6

3-d. Explain the three layered architecture model of IoT with a suitable diagram. (CO2)   6

3-e. Explain the various types of pins in Arduino Uno. (CO3)   6

3.f. Differentiate between Wi-Fi and Li-Fi. (CO4)   6

3.g. Explain symmetric and asymmetric encryption. (CO5)   6

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SECTION C   50

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

4-a. Describe the various technologies that enabled IoT. Explain with an example. (CO1)   10

4-b. Describe the various uses of M bed operating system for IoT applications. (CO1)   10

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

5-a. Differentiate between cloud, fog, and edge computing paradigms. (CO2)   10

5-b. Discuss the role of gateways in fog architectures for IoT. (CO2)   10

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

6-a.   Discuss the differences between Arduino Uno and Raspberry Pi. What are the   10
          advantages of Raspberry Pi?   (CO3)

6-b.   With the help of neat diagram explain the working of Arduino Uno. (CO3)   10

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

7-a.   What is E-health? Write down the various characteristics of E-health in detail.   10
          (CO4)

7-b.   Define RFID tag and RFID reader. Also write down the various features and   10
          specifications of RFID.   (CO4)

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

8-a.   With the help of neat diagram explain the threat modelling methodologies with   10
          respect to IoT. (CO5)

8-b.   Explain how smart governance management using IoT will play an important   10
          role for making a smart city? (CO5)