Printed Page:- 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 - SEPTEMBER 2022

Subject: Internet of Things

Time: 3 Hours Max. Marks: 100

General Instructions:

1. The question paper comprises three sections, A, B, and C. You are expected to answer them as directed.
2. Section A - Question No- 1 is 1 marker & Question No- 2 carries 2 mark each.
3. Section B - Question No-3 is based on external choice carrying 6 marks each.
4. Section C - Questions No. 4-8 are within unit choice questions carrying 10 marks each.
5. 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. What is the instruction set used by ARM7? [CO1] 1

(a) 16-bit instruction set

(b) 32-bit instruction set

(c) 64-bit instruction set

(d) 8-bit instruction set

1-c. _____ in the IoT Architecture is the hardware and software gateways that analyze and pre-process the data before transferring it to the cloud. [CO2] 1

(a) Data Center

(b) Edge IT

(c) Gateways

(d) Data Acquistion

1-d. How many instruction sets does ARM have? [CO2] 1

(a) One

(b) Two

(c) Three

(d) Four

1-e. What is the use of PWM signals in IoT development boards? [CO3] 1

(a) They are used by sensors to have analog input

(b) They are used by sensors to have digital input

(c) They are used by actuators to have analog input

(d) They are used by actuators to have digital input

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

(a) EEPROM

(b) Wire

(c) DHT11

(d) ArduinoJson

1-g. Name the original transport protocol for XMPP. [CO4] 1

(a) FCP

(b) TCP

(c) MCP

(d) HCP

1-h. The architecture of the XMPP network is similar to _____. (CO4) 1

(a) Chat box

(b) Web browser

(c) Gaming

(d) Email

1-i. The DES algorithm has a key length of _____. [CO5] 1

(a) 64 Bits

(b) 128 Bits

(c) 16 Bits

(d) 32 Bits

1-j. Which ML technology can be used to identify and track individual persons? [CO5] 1

(a) Credit- card fraud detection

(b) E-readers

(c) Facial recognition

(d) Shape recognition

2. Attempt all parts:-

2.a. Give few examples of sensors commonly used for any IoT application. [CO1] 2

2.b. Write the sequence of layers of layered architecture of IoT from upper layer to lower layer. [CO2] 2

2.c. What is the use of GPIO pins in Raspberry Pi ? [CO3] 2

2.d. What are the various IoT communication technologies? [C04] 2

2.e. Define Asymmetric Encryption. Name any two algorithms used for it. (CO5) 2

SECTION B 30

3. Answer any five of the following:-

3-a. Differentiate between SaaS, PaaS and IaaS cloud computing services. [CO1] 6

3-b. Differentiate between IPv4 and IPv6 protocols. [CO1] 6

3-c. Describe the memory management of an ARM Cortex M4. [CO2] 6

3-d. Discuss the various functions that are performed by processing layer. [CO2] 6

3.e. Write the various versions of Raspberry Pi and explain any one of them. [CO3] 6

3.f. Explain Z-wave communication technology and write down its various features. [CO4] 6

3.g. Explain six basic security principles of cyber security. [CO5] 6

SECTION C 50

4. Answer any one of the following:-

4-a. Explain about descriptive and predictive big data analytics with a suitable example. [CO1] 10

4-b. List the sensors and other basic requirements for a self driving cars for safe navigation from one point to another. [CO1] 10

5. Answer any one of the following:-

5-a. Discuss the design objectives of IoT architecture needed to target a horizontal system of real-world services. [CO2] 10

5-b. Illustrate cloud computing. Explain the various cloud deployment models. (CO2) 10

6. Answer any one of the following:-

6-a.	Draw the pin diagram of Raspberry Pi 4 model B and explain the various functions of its GPIO pins. (CO3)	10
6-b.	Describe the operating principle of successive approximation type ADC. What are its advantages and disadvantages? [CO3]	10

7. Answer any one of the following:-

7-a.	Write short note on: (CO4) a) Li-Fi b) Wi-Fi	10
7-b.	Write short note on: [CO4] a) Publisher-Subscriber Model b) Request-Response Model	10

8. Answer any one of the following:-

8-a.	Demonstrate the iterative approach that is used for implementation of smart city solutions. (CO5)	10
8-b.	What is code signing? How does code signing protect a mobile app? [CO5]	10