Printed Page:- **Subject Code**:- **ACSIOT0303**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: III - CARRY OVER THEORY EXAMINATION - APRIL 2023

Subject: Introduction to IOT

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 IoT Architecture given by ITU, NC stands for [CO1] 1

(a) Naming Capability

(b) Network Capability

(c) Network Control

(d) Naming Control

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. Loud Speaker is [CO2] 1

(a) Actuator

(b) Sensor

(c) Transducer

(d) None of the above

1-d. Potentiometer is which of the following types of sensor [CO2] 1

(a) Speed Sensor

(b) Light Sensor

(c) Position Sensor

(d) Force Sensor

1-e. What does p refer for in ATmega328p? [CO3] 1

(a) Production

(b) Power Pico

(c) Pico-Power

(d) Programmable on chip

1-f. How many arguments does the analogRead() function have? [CO3] 1

(a) 1

(b) 2

(c) 3

(d) 4

1-g. Which is low data rate WPAN standard [CO4] 1

(a) IEEE 802.15.2

(b) IEEE 802.15.4

(c) IEEE 802.15e

(d) IEEE 802.15c

1-h. Which one of the following protocols is lightweight? [CO4] 1

(a) IP

(b) HTTP

(c) MQTT

(d) CoAP

1-i. Which of the following statements is false? [CO5] 1

(a) In Local Operation Networks (LonWorks), the Neuron chip is a SOC with multiple microprocessors, RAM, ROM and 10 interface ports.

(b) Zigbee consists of three layers — Physical, Medium Access Control, and Network

(c) X-10 is mainly used for control of lighting, appliance networks and security sensors in a Home Area Networks (HAN)

(d) All of these are false

1-j. Blynk used for [CO5] 1

(a) Compile Scripts

(b) control hardware remotely

(c) Simulate design

(d) None of above

2. Attempt all parts:-

2.a. Explain Any Time communication [CO1] 2

2.b. Provide 3 examples of sensors. [CO2] 2

2.c. Write snippet for pinMode() Function Syntax [CO3] 2

2.d. Enlist long range protocols in use of IOT communication. (CO4) 2

2.e. Differentiate IoT and IIOT. [CO5] 2

SECTION B **30**

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

3-a. Explain any 3 technologies behind IoT. [CO1] 6

3-b. Draw six layer IoT architecture inline with OSI Model. [CO1] 6

3-c. Compare active sensor and passive sensor with example. (CO2) 6

3-d. Explain components of RFID in brief. (CO2) 6

3.e. Write a program using Arduino uno to glow red LED if distance of ultrasonic sensor is less than 20 CM from an object. Else glow green LED. [CO3] 6

3.f. What is Data aggregation in IoT? [CO4] 6

3.g. What do you understand by Smart Energy? How it can be implemented in IoT. [CO5] 6

SECTION C **50**

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

4-a. Point out various challenges of IoT. [CO1] 10

4-b. Design your own conceptual equation for IoT framework, justify. [CO1] 10

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

5-a. Draw flow diagram of transducer with examples. [CO2] 10

5-b. What is the difference between passive and active sensors. [CO2] 10

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

6-a. Select the appropriate sensor to sense the motion, make schematic of the 10

sensor and write the sketch of interfacing. [CO3]

6-b. Write a Arduino sketch to implement switch case statement used with serial input with circuit. [CO3] 10

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

7-a. Write short notes on a) Cluster-based aggregation b)Chain-based aggregation c)Tree-based aggregation (CO4) 10

7-b. Write short notes on a) MQTT b)CoAP c)AQMP (CO4) 10

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

8-a. Explain Smart Water Management in agriculture Using IoT. Draw Component diagram. [CO5] 10

8-b. Discuss details of technological focus areas for smart cities like data collection, data transmission, data storage and data processing. [CO5] 10