Printed Page:-04 Subject Code:- BCSIOT0303

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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: III - THEORY EXAMINATION (2024 - 2025)

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.

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SECTION-A 20

1. Attempt all parts:-

1-a. In IoT Architecture given by ITU, NC stands for _____. [CO1] [K1] 1

(a) Network Capabilities

(b) Network Communication

(c) Node Controller

(d) Network Configuration

1-b. Which of the following is a major concern in IPv4 addressing? [CO1] [K2] 1

(a) Reliable data transmission

(b) Only addressing

(c) Provide multicast addressing

(d) All of these

1-c. Which power supply range is suitable for Node MCU boards? [CO2] [K2] 1

(a) 1V - 3V

(b) 3.3V - 5V

(c) 5V - 12V

(d) 12V - 24V

1-d. Which component of Raspberry Pi is responsible for storing the operating system and user data? [CO2] [K1] 1

(a) CPU

(b) RAM

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(c) MicroSD card

(d) USB port

1-e. What does p refer to in ATmega328p? [CO3] [K1] 1

(a) Programmable on chip

(b) Power-Pico

(c) Production

(d) Pico-Power

1-f. In Tinkercad, which component represents the output in Arduino simulations? [CO3] [K2] 1

(a) LED

(b) Motor

(c) Sensor

(d) Resistor

1-g. In a Wireless Sensor Network (WSN), the process of combining multiple sensor readings to reduce redundancy and energy consumption is called: [CO4] [K2] 1

(a) Sensor Deployment

(b) Data Dissemination

(c) Data Aggregation

(d) Node Discovery

1-h. Which protocol is commonly used for local device-to-device communication in a smart home setup? [CO4] [K2] 1

(a) Zigbee

(b) LoRa

(c) Sigfox

(d) 5G

1-i. Which of the following components in a smart grid forward the energy consumption information from the home appliances to the gateways. [CO5] [K4] 1

(a) Gateways

(b) Smart Meter

(c) PHeV

(d) None of these

1-j. Long term trend tracking and preventive care in IoT healthcare is possible due to [CO5] [K2] 1

(a) ability of smart devices to collect data autonomously

(b) ubiquitous connectivity

(c) smart algorithms and analytics

(d) all of the above

2. Attempt all parts:-

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2.a.	What is thing in context of Internet of things? [CO1] [K1]	2
2.b.	Define digital sensor with one example. [CO2] [K2]	2
2.c.	Which pins are used as pulse width modulation(PWM) in arduino uno board? [CO3] [K3]	2
2.d.	Define 6LoWPAN addressing. [CO4] [K1]	2
2.e.	Mention 5 hardware components which can be used to implement smart home automation use case. [CO5] [K3]	2

SECTION-B 30

3. Answer any five of the following:-

3-a.	Explain different type of sources of IoT. [CO1] [K1]	6
3-b.	Elaborate IoT Systems layers and standardization in short. [CO1] [K1]	6
3-c.	What do you mean by a sesnor, Explain with example. [CO2] [K2]	6
3-d.	Draw flow diagram of a transducer. [CO2] [K3]	6
3.e.	Differentiate between Arduino board, NodeMCU, and Raspberry Pi. [CO3] [K3]	6
3.f.	What is Data Dissemination in IoT? [CO4] [K1]	6
3.g.	Describe Data Acquisition technologies in IoT. [CO5] [K2]	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	What is vision of IoT? How does the vision reflect in use of IoT in smart street lighting? [CO1] [k4]	10
4-b.	Explain need of internet of things with example. [CO1] [K1]	10

5. Answer any one of the following:-

5-a.	Explain concept of Ultrasonic sensor with neat and clean diagram. [CO2] [K2]	10
5-b.	Differentiate between analog and digital sensor. [CO2] [K3]	10

6. Answer any one of the following:-

6-a.	Define strings. Explain two types of strings in Arduino Programming with support of code in each type. [CO3] [K2]	10
6-b.	Create a code and circuit for a blinking led pattern where the blinking is done following the odd even pattern. [CO3] [K6]	10

7. Answer any one of the following:-

7-a.	Describe how ZigBee can be implemented in smart streetlights to enable features such as automated dimming, fault detection, and energy reporting. Include its advantages over other short-range protocols. [CO4] [K5]	10
7-b.	Explain how MQTT works. Provide various QoS levels of MQTT. [CO4] [K2]	10

8. Answer any one of the following:-

8-a.	How does e-health improve healthcare accessibility and efficiency? Identify the sensors which can contribute for healthcare use cases. [CO5] [K6]	10
8-b.	Explain Smart Water Management in agriculture Using IoT. Draw Component diagram. [CO5] [K5]	10

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