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BTECH
(SEM VII) THEORY EXAMINATION 2024-25
INTERNET OF THINGS

TIME: 3 HRS

M.MARKS: 100

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt all questions in brief.

2 x 10 = 20

| Q no. | Question | CO | Level |
|-------|--|----|-------|
| a. | Define IoT. | 1 | K1 |
| b. | Give 4 applications of IoT. | 1 | K1 |
| c. | Define RFID Communication. | 2 | K1 |
| d. | Define BeagleBone board. | 2 | K1 |
| e. | What is Data aggregation & dissemination? | 3 | K2 |
| f. | What are the roles of network for IoT deployment in various devices? | 3 | K2 |
| g. | Name two Arduino board names. | 4 | K1 |
| h. | Give 4 names of Arduino library. | 4 | K1 |
| i. | Name any 4 sensors in IoT. | 5 | K2 |
| j. | Explain any two challenges in IoT Design. | 5 | K1 |

SECTION B

2. Attempt any three of the following:

10 x 3 = 20

| | | | |
|----|---|---|----|
| a. | What are the functions of data consolidation in IoT? | 1 | K1 |
| b. | What is RFID? Explain working of RFID. | 2 | K2 |
| c. | Explain routing protocols with its type. | 3 | K4 |
| d. | Write a C program to interface a DHT11 sensor and an LED with a microcontroller. The LED should turn on only if the temperature exceeds 35°C and the humidity drops below 40% simultaneously. | 4 | K3 |
| e. | Explain the functional layers and capabilities of an IoT solution with a neat diagram. | 5 | K2 |

SECTION C

3. Attempt any one part of the following:

10 x 1 = 10

| | | | |
|----|---|---|----|
| a. | Explain industries can benefit from IoT | 1 | K1 |
| b. | Explain IoT Architectural view. | 1 | K1 |

4. Attempt any one part of the following:

10 x 1 = 10

| | | | |
|----|---|---|----|
| a. | Explain three popular IoT hardware Platforms | 2 | K2 |
| b. | Write short notes on sensors and actuators with examples. | 2 | K2 |

5. Attempt any one part of the following:

10 x 1 = 10

| | | | |
|----|---|---|----|
| a. | Classify MAC Protocol used in sensors network. | 3 | K2 |
| b. | Discuss various standards and technologies that enables Ad hoc connectivity between devices that forms the basis of IoT | 3 | K2 |

6. Attempt any one part of the following:

10 x 1 = 10

| | | | |
|----|---|---|----|
| a. | Write an Arduino program to blink an LED connect. However, instead of a fixed blink pattern, make the LED blink using a Fibonacci sequence of delays (e.g., 1s, 1s, 2s, 3s, 5s, 8s, etc.) between on and off states. Reset the sequence after 5 blinks. | 4 | K2 |
| b. | Explain the anatomy of Arduino Platform board. | 4 | K3 |

7. Attempt any one part of the following:

10 x 1 = 10

| | | | |
|----|--|---|----|
| a. | Explain Designing of smart streetlights in smart city. | 5 | K2 |
| b. | Explain the block diagram of IoT device hardware. | 5 | K2 |