Roll No: | | | | | | | | | | | | |

BTECH
(SEM V) THEORY EXAMINATION 2023-24
INTRODUCTION TO INTERNET OF THINGS

TIME: 3 HRS M.MARKS: 100

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1.   Attempt *all* questions in brief.

Q no.	Question	Marks	CO
a.	What do you mean by the term "MAC protocol".	2	1
b.	What is coding? Using emulator and libraries explain how the addition and multiplication operations are performed.	2	1
c.	What do you mean by IoT supported Hardware? Explain in brief.	2	2
d.	Explain the concept of ARM cortex.	2	2
e.	What is data aggregation & dissemination?	2	3
f.	Explain data modeling using the entity relationship model, ER model concepts, and notation for ER Diagram.	2	3
g.	Explain smart metering, e-health, city automation, and automotive applications.	2	4
h.	Explain the concept of data independence and database language and interfaces.	2	4
i.	Explain the design challenges in IoT.	2	5
j.	Explain how data is communicated with hardware units.	2	5

SECTION B

2.   Attempt any *three* of the following:

Q no.	Question	Marks	CO
a.	What is IoT? Differentiate conceptual framework, and architectural view. Explain ease of designing and affordability.	10	1
b.	Explain the sensors, digital sensors, and actuators with neat sketches.	10	2
c.	Explain network & communication aspects in IoT. Also discuss wireless medium access issues, MAC protocol survey, and data aggregation & dissemination.	10	3
d.	What is Ardunio IDE? Explain programming of the Ardunio for IoT.	10	4
e.	Explain the design challenges in IoT. Explain the development challenges and security challenges in IoT.	10	5

SECTION C

3.   Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	Explain the communication technologies, data enrichment and consolidation in case of IoT. Explain its ease of designing and affordability.	10	1
b.	Explain IoT/M2M systems layers and design standardization.	10	1

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4. **Attempt any *one* part of the following:**

Q no.	Question	Marks	CO
a.	Explain the hardware's which are utilized for IoT. Compare radio frequency identification (RFID) technology, and wireless sensor networks.	10	2
b.	Explain embedded platforms for IoT. Differentiate Raspberry pi, Beagle Bone, Intel Galileo boards and ARM cortex.	10	2

5. **Attempt any *one* part of the following:**

Q no.	Question	Marks	CO
a.	Narrate the concept of sensor deployment & node discovery.	10	3
b.	Explain the wireless medium access issues. Also discuss MAC protocol survey, and survey routing protocols.	10	3

6. **Attempt any *one* part of the following:**

Q no.	Question	Marks	CO
a.	How programming is done using Arduino? Explain programming of the Ardunio platform boards anatomy and Ardunio IDE.	10	4
b.	Explain the programming of the Ardunio for different applications. Explain it with necessary steps and diagrams.	10	4

7. **Attempt any *one* part of the following:**

Q no.	Question	Marks	CO
a.	Explain the applications of IoT and its major challenges. Explain the key features of mobiles and tablets.	10	5
b.	Explain the designing of smart street lights in smart city. How data is communicated with hardware units? Explain the key features of home automation with necessary steps.	10	5