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School of Engineering Sciences & Technology
New Delhi – 110062
Odd Semester Examination, 2024 (Backlog)

Paper Name: Introduction to Internet of Things
Time: 3 Hours

Paper Code: BTECE 309
Maximum Marks: 75

Follow proper numbering for answering the questions.

Section-A				
All questions are compulsory in this Section (5x7=35)				
Ques. No.		Marks	CO	BL
1.	Define the term Internet of Things (IoT) and discuss its key characteristics and components.	5	1	L1
2.	What are the different IEEE 802.15.4 Derived Standards.	5	3	L2
3.	Differentiate between Edge Computing and Cloud Computing in the Context of IoT.	5	3	L3
4.	Write the difference between Sensors and Actuators with Example?	5	5	L5
5.	Explain the working principles of the MQTT protocol. Discuss its advantages and limitations in IoT communication.	5	3	L4
6.	Explain the role of TCP/IP in IoT networks and compare it with lightweight protocols like UDP in IoT applications.	5	4	L3
7.	Design a Smart Irrigation system using IoT, specifying hardware components, data flow, and functionality.	5	5	L6
Section-B				
Attempt any FOUR Questions from this Section (4x10=40)				
1	Explain IoT Architecture with four layers of IoT Network.	10	1	L1
2	Write an Arduino program to control an LED using a motion sensor. Explain how the system works.	10	2	L5
3	Describe the architecture of a Zigbee-based IoT network. Discuss its advantages for home automation and industrial use.	10	3	L3
4	Write an Arduino program to read temperature and humidity data from a DHT11 sensor. Use the serial monitor to display the real-time values. Additionally, explain how the program ensures accurate readings and handles sensor errors	10	3	L5
5	Explain the use of ThingSpeak for IoT data analytics. Provide a step-by-step guide for setting up a real-time monitoring system	10	4	L6
6	Take case study to explain the deployment and operational view, resources, services, virtual entities, users in an IoT system by considering Smart City as an Example.	10	5	L4

BL- Bloom's Taxonomy Levels (1-Remembering, 2-Understanding, 3-Applying, 4-Analysing, 5- Evaluating, 6- Creating), CO- Course Outcomes