CMR Technical Campus

B. Tech. Mid Question Bank (R22 Regulation)

Academic Year: 2024-2025 **Semester:** VI

Subject Name: FUNDAMENTALS OF INTERNET OF THINGS

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PART-A

Q.No	Questions	Marks	BL	CO	Unit No
1	Define the Internet of Things (IoT). list out its features	2M	L1	CO1	I
2	Which characteristic of IoT ensures energy efficiency?	2M	L2	CO1	I
3	List any two functional blocks of an IoT system.	2M	L1	CO1	I
4	What is the role of a gateway in IoT networking?	2M	L2	CO1	I
5	Name any two communication protocols used in IoT	2M	L1	CO1	I
6	Which protocol is used to link all devices in IOT	2M	L2	CO1	I
7	Define Machine-to-Machine (M2M) communication.	2M	L1	CO2	II
8	State one similarity between IoT and M2M.	2M	L1	CO2	II
9	Why is interoperability important in IoT systems?	2M	L2	CO2	II
10	What is Arduino? List out its features.	2M	L1	CO2	II
11	What is the function of the void setup() function in Arduino?	2M	L2	CO2	II
12	List out the features of Raspberry	2M	L1	CO2	II
13	List out the components required for Interfacing with a Temperature Sensor	2M	L1	CO3	III
14	Define Python class	2M	L1	CO3	III
15	State one use case of Raspberry Pi in IoT applications.	2M	L2	CO3	III
MID-II Questions					
16	Which Raspberry Pi pins are used for GPIO?	2M	L1	CO3	III
17	Name two basic peripherals that can be connected to a Raspberry Pi.	2M	L1	CO3	III
18	What is the purpose of connecting Raspberry Pi to a network in IoT?	2M	L2	CO3	III
19	Which GPIO pins are used for I2C communication on Raspberry Pi?	2M	L3	CO4	IV
20	Define Software Defined Network (SDN).	2M	L1	CO4	IV
21	List one advantage of using SDN over traditional networking.	2M	L3	CO4	IV
22	What role does SDN play in IoT networks?	2M	L3	CO4	IV
23	List out challenges in implementing SDN for IoT systems.	2M	L1	CO4	IV
24	Define data analytics in the context of IoT.	2M	L1	CO4	IV
25	Define cloud computing. List out its applications .	2M	L1	CO5	V
26	What is the role of virtualization in sensor-cloud systems?	2M	L2	CO5	V
27	Name one communication protocol used in connected vehicle systems.	2M	L1	CO5	V
28	What does IIoT stand for?	2M	L1	CO5	V
29	What role do sensors play in agriculture IoT systems?	2M	L2	CO5	V
30	Name one wearable IoT device used in healthcare.	2M	L1	CO5	V

PART-B

Q.No	Questions	Marks	BL	CO	Unit No
1	Discuss the main characteristics of IoT.	4M	L3	CO1	I
2	Explain the physical design of IoT systems.	4M	L2	CO1	I
3	Analyze how the physical design of IoT in a smart home system.	4M	L4	CO1	I
4	Explain the functional blocks of IoT.	4M	L1	CO1	I
5	Differentiate between REST API and Websocket API	4M	L5	CO1	I
6	Explain the basics of networking in IoT systems.	4M	L2	CO1	I
7	Discuss structure of wireless sensor Networking	8M	L4	CO1	I
8	Discuss the role of communication protocols in IoT.	8M	L3	CO1	I
9	Explain the importance of secure communication protocols in IoT.	8M	L5	CO1	I
10	Explain the concept of M2M communication and its Applications in the energy and healthcare industries.	4M	L2	CO2	II
11	Analyze how M2M communication differs from traditional human-to-machine communication.	4M	L4	CO2	II
12	Compare and contrast IoT and M2M communication.	4M	L4	CO2	II
13	Evaluate how the integration of IoT capabilities extends the functionality of traditional M2M systems in smart cities.	4M	L5	CO2	II
14	Discuss the different types of interoperability in IoT.	4M	L3/L5	CO2	II
15	Analyze the challenges of achieving interoperability in IoT ecosystems.	4M	L4	CO2	II
16	Explain the structure of an Arduino program with examples of basic functions like setup() and loop().	8M	L1	CO2	II
17	Develop a basic Arduino program to blink an LED.	8M	L3	CO2	II
18	Explain the process of integrating a temperature sensor and an actuator (like a fan) with Arduino.	8M	L2	CO2	II
19	Explain the key features of Python programming and how they make it suitable for IoT applications.	4M	L1	CO3	III
20	Write a Python program to calculate the sum of numbers in a list.	4M	L3	CO3	III
21	Discuss the hardware and software features of Raspberry Pi in IoT development.	4M	L2	CO3	III
22	Analyze how Raspberry Pi can be used to create a low-cost IoT system.	4M	L4	CO3	III
23	Explain the process of interfacing basic peripherals with Raspberry Pi.	4M	L1	CO3	III
MID-II Questions					
24	Analyze the role of GPIO pins in interfacing Raspberry Pi.	4M	L4	CO3	III
25	Discuss the steps involved in implementing an IoT system using Raspberry Pi.	4M	L3	CO3	III
26	Analyze the challenges and solutions in implementing a smart home IoT system.	4M	L4	CO3	III
27	Design a smart weather monitoring system using Raspberry Pi.	4M	L6	CO3	III
28	Critically evaluate the effectiveness of Raspberry Pi in large-scale IoT deployments.	4M	L5	CO3	III
29	Explain how Raspberry Pi can be used to collect and process data from sensors in an IoT system.	4M	L1	CO4	IV
30	Analyze the process of implementing a home automation system using Raspberry Pi.	4M	L3	CO4	IV

31	Discuss the architecture of SDN, explaining its three main components.	4M	L1	CO4	IV
32	Analyze the benefits of SDN in managing and optimizing network traffic in data centers.	4M	L4	CO4	IV
33	Explain how SDN can improve scalability, security, and management in IoT networks.	4M	L2	CO4	IV
34	Analyze the challenges and solutions for integrating SDN with IoT in large-scale deployments.	4M	L4	CO4	IV
35	Discuss the steps involved in IoT data handling, from data collection to storage and analysis.	8M	L1	CO4	IV
36	Design an IoT-based traffic management system using Raspberry Pi and SDN.	8M	L6	CO4	IV
37	Critically evaluate the effectiveness of combining SDN and IoT for real-time data management.	8M	L5	CO4	IV
38	Explain the different service models of cloud computing with examples.	4M	L1	CO5	V
39	Discuss the architecture of sensor-cloud systems and their applications in environmental monitoring.	4M	L3	CO5	V
40	Explain the role of IoT in building smart cities.	4M	L3	CO5	V
41	Analyze the challenges of implementing IoT-based connected vehicle systems.	4M	L4	CO5	V
42	Explain the architecture of a smart grid and the role of IoT in its operation.	4M	L1	CO5	V
43	Discuss the key applications of IIoT in industries.	4M	L1	CO5	V
44	Explain how IoT is transforming agriculture through precision farming, automated irrigation, and crop monitoring.	8M	L2	CO5	V
45	Discuss the applications of IoT in healthcare, including remote monitoring, wearable devices, and telemedicine.	8M	L2	CO5	V
46	Explain the role of IoT in activity monitoring, including wearable devices and data analytics.	8M	L2	CO5	V