SILVER OAK UNIVERSITY
EDUCATION TO INNOVATION

Silver Oak College of Computer Application
Bachelor of Computer Application
5th Sem BCA (Model-2)

Semester:	5	**Academic Year:**	2024-25
Course Name:	Internet of Things	**Course Code:**	2040233303

Question bank

Sr. No.	Question Text	Marks	CO
Unit No-1: Introduction to Internet of Things			
1	Define the following terms: i) Internet of Things (IoT) ii) Gateway iii) Cloud iv) Edge Computing v) Smart Device	5M	CO-1
2	List out and describe in brief the characteristics of IoT	5M	CO-1
3	Explain in detail components of IoT System (or) Explain IoT system building blocks.	6M	CO-1
4	Describe in detail different layers of IoT system.	8M	CO-1
5	Illustrate the functioning of IoT system with any one real world example.	6M	CO-1
6	Explain in detail M2M architecture with examples.	6M	CO-1
7	Explain in detail End-to-End architecture with examples.	8M	CO-1
8	Distinguish between M2M architecture and End-to-End architecture	4M	CO-1
9	Draw and explain the levels of IoT and deployment Templates.	8M	CO-1
10	Describe in detail the interdependencies of IoT and Cloud Computing.	6M	CO-1
11	Write the advantages and disadvantages of IoT system	4M	CO-1
12	Enlist few applications of IoT seen in real world and explain any four in detail.	8M	CO-1

Sr. No.	Question Text	Marks	CO
Unit No-2: IoT Devices			
13	Define the following terms: i) Sensors ii) Actuators iii) Transducers iv) Microcontroller v) Microprocessor	5M	CO-2
14	Write a brief note on sensors in IoT and explain any 4 sensors in detail	8M	CO-2
15	Write a brief note on actuators in IoT and explain any 2 actuators in detail	5M	CO-2
16	Classify the sensors based on output and datatype in brief.	6M	CO-2
17	Enlist different types of sensors	3M	CO-2
18	Enlist different types of actuators	2M	CO-2
19	Write the difference between Arduino & ESP32	4M	CO-2
20	Draw only the pin diagram of ESP32 board	3M	CO-2
21	Explain the working of ESP32 in brief	4M	CO-2
22	Write a brief note on Raspberry Pi	4M	CO-2
23	Explain in detail Embedded IoT system with neat and clean diagram	8M	CO-2
24	Explain briefly process of reading sensor & transmitting to cloud	6M	CO-2
25	Explain how device control through cloud using mobile & web application is possible.	8M	CO-2
26	Describe the following: i) IR Sensor ii) Humidity DHT-11 Sensor iii) Ultrasonic Sensor iv) Moisture Sensor	8M	CO-2
27	Describe the following: i) Pneumatic Actuator ii) Electric Actuator	4M	CO-2
Unit No-3: IoT Communication Protocols			
Sr. No.	**Question Text**	**Marks**	**CO**
28	Define IoT communication protocols. And list the differen layers of the IoT communication protocol stack.	3M	CO-3
29	Explain Link layer protocols in detail with examples and applications.	6M	CO-3
30	Explain Network layer protocols in detail with examples and applications.	6M	CO-3
31	Write the difference between IPv4 and IPv6 protocol. (at least 6 to 8 points)	4M	CO-3

32	Write a brief note on i) MQTT ii) CoAP iii) XMPP	4M (Each)	CO-3
33	Explain how the MQTT protocol facilitates communication in IoT.	4M	CO-3
34	Explain Transport layer protocols in detail with examples and applications.	6M	CO-3
35	Explain Application layer protocols in detail with examples and applications. (Any 3 protocols only)	6M	CO-3
36	Distinguish between HTTP and WebSocket application layer protocols.	4M	CO-3
37	Describe with neat and clean diagram all types of sensor network topologies.	8M	CO-3
38	Explain the (i) Star and (ii) Ring sensor network topologies.	6M	CO-3
Unit No-4: IoT Platforms and Security			
Sr. No.	**Question Text**	**Marks**	**CO**
39	List out the names of few IoT platforms and explain the role in IoT ecosystems.	6M	CO-4
40	Describe how IoT platforms facilitate the integration of different IoT devices and sensors.	6M	CO-4
41	Explain the role of data analytics in IoT.	4M	CO-4
42	List & describe the different techniques of data analytics used in IoT applications.	6M	CO-4
43	Illustrate with real world example, the use of data analytics in IoT enabled system.	8M	CO-4
44	Explain the basic concepts of cloud storage and its role in IoT systems.	6M	CO-4
45	Evaluate the performance of different cloud storage providers (e.g., AWS, Google Cloud, Azure) for IoT data storage and retrieval.	8M	CO-4
46	Describe briefly the IoT security issues.	6M	CO-4
47	List out & explain various risks associated with IoT system.	4M	CO-4
48	Describe briefly the Security components for IoT system.	8M	CO-4
49	Discuss in detail about the challenges in IoT security.	6M	CO-4
Unit No-5: Applications of IoT			
Sr. No.	**Question Text**	**Marks**	**CO**
50	Define Industrial IoT (IIoT). How is it different from consumer IoT?	4M	CO-5
51	Draw and explain common architecture for IoT application.	8M	CO-5

52	Discuss any two IoT applications in detail for home automation system.	6M	CO-5
53	How would you integrate IoT into an agriculture system to monitor soil moisture levels and automate irrigation? Describe the hardware and software components for the same.	8M	CO-5
54	Discuss IoT application as health care monitoring. (Or) Explain how IoT enhances healthcare systems. Use examples to illustrate the advantages.	8M	CO-5
55	Write a note on IoT based river water pollution monitoring	6M	CO-5
56	Describe in brief IoT based street light control and monitoring.	6M	CO-5
57	Explain briefly how a voice app works on IoT device.	6M	CO-5

Note: Question marks may vary slight depending upon the exam paper format.

Programs:

1. Write a program to control two LEDs using two Pushbuttons.
2. Write a program to read the IR sensor data and display on Serial Monitor of Arduino IDE.
3. Write a program to read the DHT-11 sensor data and display on Serial Monitor of Arduino IDE.
4. Write a program to blink LED externally by any GPIO pin of Raspberry Pi board using Python programming language.
5. Write a program to control DC Motor Pump via Relay Module based on the set threshold value of Soil Moisture sensor and also display the sensor data on Serial Monitor of Arduino IDE.

Note: Program marks range may vary between 4M to 8M

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