Reg. No.															

Question Paper Code	13548

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Fifth Semester

Artificial Intelligence and Data Science

20AIPC504 - IOT AND SENSORS TECHNOLOGIES

Fifth Semester

Duration: 3 Hours Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Consider the scenario: A research institute deploys IoT-based sensors in a forest to detect early signs of wildfires, enabling prompt response and containment. This application primarily emphasizes: (a) Disaster Management (b) Earthquake Early Detection (c) Air Pollution Monitoring (d) Noise Urban Maps	1	K2	CO1
2.	How does the communication module contribute to scalability in IoT systems? (a) By restricting device connections (b) By enabling seamless device integration (c) By avoiding data exchange (d) By limiting communication protocols	1	K1	CO1
3.	Which of the following is an example of an adaptation layer of IETF architecture in IoT communication? (a) CoAP (b) ROLL (c) 6LoWPAN (d) CoRE	1	K1	CO2
4.	Which type of model is an Exclusive pair model? (a) Uni-directional (b) Bi-directional (c) Multi-directional (d) None of the mentioned	1	K1	CO2
5.	Which one of the following protocols is lightweight? (a) IP (b) HTTP (c) MQTT (d) CoAP	1	K1	CO3
6.	The GPIO.setmode() function is used to set the _____ mode, specifying the pin numbering scheme in a Python script. (a) Cleanup (b) board (c) BCM (d) channel	1	K2	CO3
7.	Consider the following scenario: You are building a temperature monitoring system using a temperature sensor and an Arduino board. Which data type should you use to store the temperature value read from the sensor? (a) Boolean (b) int (c) char (d) float	1	K2	CO4
8.	In Arduino, what is the purpose of the delay() function? (a) To measure the time elapsed since the program started (b) To set the baud rate for serial communication (c) To provide a delay in milliseconds (d) To perform mathematical calculations	1	K1	CO4
9.	What is an advantage of using USB sensors in data acquisition systems? (a) Requires complex wiring (b) Provides easy plug-and-play connectivity (c) Needs specialized software (d) Uses proprietary protocols	1	K1	CO5
10.	To improve accuracy, a thermistor-based temperature sensor may use a _____ to linearize the output. (a) Capacitor (b) linearization algorithm (c) Transformer (d) potentiometer	1	K1	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	Differentiate between the logical and physical design of IoT.	2	K1	CO1
12.	State the four pillars of Internet of Things.	2	K1	CO1

13.	Identify the purpose of the information model.	2	K1	CO2
14.	Sketch a simplified IoT Architecture.	2	K1	CO2
15.	Examine the use and purpose of Arduino.	2	K2	CO3
16.	Summarize the IoT protocols IEEE 802.15.4	2	K2	CO3
17.	Give the pin configuration/pin diagram of ESP8266 Wi-Fi module	2	K1	CO4
18.	What are the advantages of using Python for Arduino programming?	2	K1	CO4
19.	Compare Sensors with Actuator.	2	K2	CO5
20.	Can distance be measured using an ultrasonic sensor? Justify.	2	K2	CO5
21.	How does RFID identify, communicate and can be used for IoT applications?	2	K2	CO6
22.	Write the procedure for automotive IoT, monitoring the driver health during driving.	2	K2	CO6

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Discuss the different communication models in the IoT environment.	11	K2	CO1
		OR			
	b)	Elaborate the open M2M protocols and framework for the M2M application development	11	K2	CO1
24.	a)	Compare and contrast the ETSI and IETF model.	11	K2	CO2
		OR			
	b)	Explain IOT reference architecture's deployment and operational view.	11	K2	CO2
25.	a)	Describe the TCP/IP protocol in detail with the necessary sketch.	11	K2	CO3
		OR			
	b)	Explain in detail about interfaces: Serial, SPI, I2C.	11	K2	CO3
26.	a)	Discuss the interfacing of LDR with Ardunio to turn ON/OFF LED based on light intensity sensed.	11	K3	CO4
		OR			
	b)	Code with Ardunio and suitable sensor to display a message in the serial monitor as "TOUCHED" or "NOT TOUCHED", depending on the action performed.	11	K3	CO4
27.	a)	Describe the working of DHT11 temperature and humidity Sensor	11	K2	CO5
		OR			
	b)	Explain how distance can be measured using ultrasonic sensors with real time example.	11	K2	CO5
28.	a)	Design domain and information model of Safe home system with features such as authorized entry using biometric, alarming for fire/ smoke, auto switch on and off during emergency	11	K3	CO6
		OR			
	b)	Brief the role of IoT technology in the field of Agriculture with suitable diagram.	11	K2	CO6