



PRESIDENCY UNIVERSITY

BENGALURU

Roll No.														
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End - Term Examinations – May/June 2026

Date: 15- 05-2026

Time: 09:30am – 12:30pm

School: SOCSE	Program: B.Tech (IOT)	
Course Code: CIT3416	Course Name: Foundations of IoT & Embedded Circuit Systems	
Semester: VI	Max Marks: 100	Weightage: 50%

CO - Levels	CO1	CO2	CO3	CO4	CO5
Marks	28	16	32	09	15

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks.

10Q x 2M=20M

1.	What is digital Transformation?	2 Marks	L1	CO1
2.	List Major IoT services?	2 Marks	L2	CO1
3.	Define Cognitive IoT?	2 Marks	L1	CO1
4.	What is cloud computing?	2 Marks	L2	CO1
5.	Explain Transistor types?	2 Marks	L1	CO2
6.	List Types of Capacitor?	2 Marks	L1	CO2
7.	What is remote access?	2 Marks	L1	CO3
8.	List three characteristics of 5G mobile communication?	2 Marks	L1	CO3
9.	What is PWM in GPIO?	2 Marks	L1	CO4
10.	Describe actuators and give examples.	2 Marks	L1	CO4

Part B

Answer the Questions.

Total Marks 80M

11.	a.	Illustrate the evolution of Industrial Revolutions leading to Industry 4.0.	6 Marks	L2	CO1
	b.	Explain Cloud Computing and its importance in IoT.	6 Marks	L2	CO1
	c.	Explain smart healthcare applications of IoT.	8 Marks	L2	CO1
Or					
12.	a.	With neat diagram Illustrate Cognitive IoT Infrastructure	6 Marks	L2	CO1
	b.	Explain the role of AI and Big Data in IoT.	6 Marks	L2	CO1
	c.	Explain IoT-based smart city infrastructure.	8 Marks	L2	CO1

13.	a.	Illustrate types of Electronics parts and its usage in IoT	6 Marks	L2	CO2
	b.	Differentiate between passive and active components.	6 Marks	L2	CO2
	c.	Explain autonomous systems with reference to IoT.	8 Marks	L2	CO3
Or					
14.	a.	Explain the role of sensors in IoT with examples.	6 Marks	L2	CO2
	b.	Describe the working of an ultrasonic sensor and LDR sensor	6 Marks	L2	CO2
	c.	Illustrate the components of Raspberry Pi board.	8 Marks	L2	CO3

15.	a.	Illustrate Sensor Network, Early IoT and Future IoT Platform features.	6 Marks	L2	CO3
	b.	Compare IPv4 vs IPv6. List the features of IPv6	6 Marks	L2	CO3
	c.	Illustrate IoT Cloud Components? Compare Cloud Computing and Edge Computing.	8 Marks	L2	CO3
Or					
16.	a.	With neat diagram explain Connection procedure of the MAC layer.	6 Marks	L2	CO3
	b.	With neat diagram illustrate IEEE 802.11 MAC header structure	6 Marks	L2	CO3
	c.	With neat diagram illustrate Zigbee Protocol Stack	8 Marks	L2	CO3

17.	a.	Smart point is a renowned retail corporation that operates a chain of hypermarkets. It has its stores located at different regions across India. Every smart point store has different departments, offering a range of products to its customers. Here, Smart Point has provided the data regarding sales in its 45 stores located in different states during the year 2021. The data	15 Marks	L3	CO5
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		is provided on a weekly basis, and it contains both categorical variables and numerical variables. Smart point tries to find total sales of different products in its stores in order to increase/decrease the supply of products based on the requirement. Prepare a Map Reduce program to process the given dataset to display the value of total sales for the Books <table><tr><th>Date</th><th>Location</th><th>Product</th><th>Price</th><th>Card</th></tr><tr><td>1/1/2021</td><td>Gujarat</td><td></td><td>214.05</td><td>Cash</td></tr><tr><td>1/2/2021</td><td>Karnataka</td><td>Books</td><td>153.57</td><td>Visa</td></tr><tr><td>1/3/2021</td><td>Goa</td><td>Music</td><td>66.08</td><td>Cash</td></tr><tr><td>1/4/2021</td><td>Haryana</td><td>Pet Supplies</td><td>493.51</td><td>Visa</td></tr><tr><td>1/5/2021</td><td>Gujarat</td><td>Books</td><td>235.63</td><td>MasterCard</td></tr><tr><td>1/6/2021</td><td>Bihar</td><td>Men's Clothing</td><td>247.18</td><td>MasterCard</td></tr><tr><td>1/7/2021</td><td>Punjab</td><td>Cameras</td><td>379.6</td><td>Visa</td></tr><tr><td>1/8/2021</td><td>Sikkim</td><td>Books</td><td>296.8</td><td>Cash</td></tr><tr><td>1/9/2021</td><td>Karnataka</td><td>Toys</td><td>25.38</td><td>Visa</td></tr><tr><td>1/10/2021</td><td>Bihar</td><td>Books</td><td>213.88</td><td>Visa</td></tr></table>	Date	Location	Product	Price	Card	1/1/2021	Gujarat		214.05	Cash	1/2/2021	Karnataka	Books	153.57	Visa	1/3/2021	Goa	Music	66.08	Cash	1/4/2021	Haryana	Pet Supplies	493.51	Visa	1/5/2021	Gujarat	Books	235.63	MasterCard	1/6/2021	Bihar	Men's Clothing	247.18	MasterCard	1/7/2021	Punjab	Cameras	379.6	Visa	1/8/2021	Sikkim	Books	296.8	Cash	1/9/2021	Karnataka	Toys	25.38	Visa	1/10/2021	Bihar	Books	213.88	Visa			
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	b.	Explain the GPIO port control and list application with Raspberry Pi.	5 Marks	L2	CO4																																																							
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18.	a.	“Inception” is a 2024 science fiction action movie written and directed by Christopher Nolan. The dataset below shows the google reviews for the movie from five different users. Prepare a Map Reduce Program to process the data and display the number of occurrences of the words “best” and “great” from the reviews in order to understand the popularity of the movie. “This is one of the best movies of the century. The movie is totally captivating.” “In my opinion, this is one of the best movies of all time.” “It was decent but hard to understand the plot.” “Inception is one of the best films you can ever imagine. This movie was breathe taking and a great treat.” “There were plot holes but good acting.”	15 Marks	L3	CO5																																																							
	b.	Explain the future scope and trends of IoT.	5 Marks	L2	CO4																																																							