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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

October 2024 Supplementary Examinations

Programme: B.E.   **Semester: III**

Branch: CSE (IoT & Cybersecurity including Blockchain)   **Duration: 3 hrs.**

Course Code: 23IC3PCEDS   **Max Marks: 100**

Course: Embedded Systems

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

<table>
<tr><td colspan="3" rowspan="2"></td><td>UNIT - I</td><td><i>CO</i></td><td><i>PO</i></td><td>Marks</td></tr>
<tr><td colspan="3">UNIT - I</td></tr>
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				CO	PO	Marks
			UNIT - I	*CO*	*PO*	**Marks**
1	a)		Explain the major technologies which play a key role in IoT	*CO1*	*PO1*	**05**
	b)		Identify and discuss the communication model and communication API that should be used for Live noise monitoring systems. Choose the appropriate IoT level for the same system with justification.	*CO2*	*PO2*	**10**
	c)		Analyze the design requirements of an IoT system for tracking package handling and choose the appropriate IoT level with justification.	*CO2*	*PO2*	**05**
			UNIT - II			
2	a)		Discuss any five parameters to be considered while selecting sensors for an IoT system.	*CO1*	*PO1*	**05**
	b)		Analyze the functionalities of I/O pins of Arduino Uno. Discuss how digital Read/Write pins behave like analog Write pins.	*CO2*	*PO2*	**05**
	c)		Discuss the following in detail (i) Sensors and Actuators. (ii) Connecting Smart Objects.	*CO2*	*PO2*	**10**
			UNIT - III			
3	a)		Design smart lighting system (circuit design and interfacing program) using LDR (Light dependent Resistor) and LED. When light intensity goes below 50% of sensor value the LED should glow automatically.	*CO3*	*PO2*	**07**
	b)		The shaft function sets the position of the servo motor according to potentiometer value. Write an Arduino program to implement the shaft function using servo motor and potentiometer.	*CO3*	*PO2*	**06**
	c)		Analyze how an IoT system can be developed which controls switching ON/OFF of AC according to ambient temperature.	*CO3*	*PO2*	**07**

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			OR			
	4	a)	Consider a scenario of a chemical factory where highly inflammable materials are used. Design an IoT system such that workers are automatically alerted by red light and sound in case fire is detected.	*CO3*	*PO2*	**10**
		b)	i) Implement an automated door bell system. ii) Implement a water level indicator system.	*CO3*	*PO2*	**10**
			UNIT - IV			
	5	a)	Write and explain the program to activate the LED and buzzer using Raspberry pi.	*CO3*	*PO2*	**08**
		b)	Write a short note on various raspberry pi interfaces used for data transfer.	*CO1*	*PO1*	**07**
		c)	Justify how Raspberry Pi is different from a desktop computer	*CO1*	*PO1*	**05**
			OR			
	6	a)	Illustrate how to interface a LED to raspberry pi and write a program to blink.	*CO3*	*PO2*	**07**
		b)	Design an automatic lightning system with LDR, Light and raspberry pi and write a python program to support the working of that design.	*CO3*	*PO2*	**08**
		c)	Describe various features of a Raspberry Pi device.	*CO1*	*PO1*	**05**
			UNIT - V			
	7	a)	Explain functional and operational view specifications for Home Intrusion detection system?	*CO2*	*PO2*	**10**
		b)	Formulate an Industrial application of the IoT system and brief on the various use case of smart and connected cities.	*CO2*	*PO2*	**10**

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