LIBRARY BANGALORE-49

EAST POINT COLLEGE OF ENGINEERING & TECHNOLOGY
An Autonomous Institution Affiliated to Visvesvaraya Technological University (VTU) Belagavi

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24IC44

Fourth Semester B.E. Degree Examination, May 2026
MICROCONTROLLER AND IOT

TIME:3 hrs. Max.Marks:100

Note: 1. Answer **any FIVE** full questions, choosing **ONE** question from **each MODULE.**
2. M: Marks, L: Bloom's level,C: Course outcomes.
3. Assume missing data suitably.

		Module-1	M	L	C
Q.1	a	Bring out the difference between: - Microprocessor and Microcontroller. RISC and CISC	10	L3	CO1
	b	Explain the architecture of an ARM embedded device with the help of neat diagram	10	L2	CO1
		OR			
Q.2	a	Explain in detail about Current Program Status Register (CPSR).	10	L2	CO1
	b	With a neat diagram, explain embedded system Hardware.	10	L2	CO1
		Module–2			
Q.3	a	Write an assembly language program to multiply 16 bit number with 8 bit number and Store the result in memory.	10	L3	CO2
	b	Explain the following instructions, also mention how many bytes it takes to store in ROM: 1. DJNZ Rn, R_ADDRESS 2. JNC R_ADDRESS 3. DA A 4. MOVX A, @A+	10	L3	CO2
		OR			
Q.4	a	Explain code optimization, profiling and cycle counting with a suitable example program.	10	L2	CO2
	b	Explain different arithmetic instructions in ARM processor with an example.	10	L2	CO2
		Module–3			
Q.5	a	Explain the IoT planes, various enablers of IoT, and the complex interdependencies among them with a block diagram.	10	L2	CO3
	b	Briefly explain all the addressing Strategies in IoT system.	10	L2	CO3
		OR			
Q.6	a	What is IoT? Write the characteristics of IoT System. List out any five real world examples where IoT Systems are put in use in the public domain.	10	L2	CO3
	b	Outline the interdependence and reach of IoT over various application domains and networking paradigms.	10	L2	CO3
		Module–4			
Q.7	a	List and Explain the types of actuators.	10	L2	CO4

	b	Define sensor and explain the characteristics of sensor.	5	L2	CO4
	c	With a neat diagram explain the working mechanism of actuator.	5	L2	CO4
		OR			
Q.8	a	Explain the major factors influence the choice of sensors in IoT-based sensing solutions.	10	L2	CO4
	b	Outline a simple actuation mechanism.	5	L2	CO4
	c	Outline the basic differences between transducers, sensors, and actuators.	5	L2	CO4
		Module–5			
Q.9	a	Outline an IoT deployment (processing offloading) with the various layers of processing involving different application domains with a diagram.	10	L2	CO5
	b	List and explain common data types in IoT applications.	5	L2	CO5
	c	Assume you want to design an IoT System to continuously monitor drinking water quality in your organization. List the hardware equipment's needed and draw the architecture diagram of your IoT System.	5	L3	CO5
		OR			
Q.10	a	Explain IoT Device Design and Selection Considerations	10	L2	CO5
	b	With a neat diagram explain onsite processing topology.	5	L2	CO5
	c	Assume you want to design an IoT system to continuously monitor air-quality at your organization machine workshop. List the hardware components required and draw the architecture diagram of your IoT system.	5	L3	CO5

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