B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – MAY / JUNE 2024
Fifth Semester
Computer Science and Technology
U19EC528 – EMBEDDED SYSTEMS DESIGN
(Regulation 2019)

Time: Three Hours   Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Distinguish between the Von Neumann and Harvard microcontrollers.	2	K2	CO1
2.	Classify embedded system based on the applications.	2	K2	CO1
3.	Write an ALP for ARM processor to find the factorial of a given number.	2	K1	CO2
4.	List the instruction sets of LPC2148 microcontroller.	2	K1	CO2
5.	For a GPIO pin to be made to act as an ON/OFF switch, which are the registers to be used in LPC2148?	2	K1	CO3
6.	Write short notes on Interrupts.	2	K2	CO3
7.	Write an ALP to rotate the stepper motor clockwise / anticlockwise continuously with full step sequence.	2	K1	CO4
8.	Sketch the connection diagram of DAC with microcontroller	2	K1	CO4
9.	Justify the advantages of mail boxes in RTOS.	2	K1	CO5
10.	Define Mutex.	2	K2	CO5

PART – B

Q.No.		Questions	Marks	KL	CO
11.	a)	Outline the components involved in an embedded system architecture.	13	K2	CO1
		(OR)			
	b)	Compare and contrast RISC and CISC architectures.	13	K2	CO1
12.	a)	Elucidate in detail about the software development tools used in LPC2148 microcontroller.	13	K2	CO2
		(OR)			
	b)	Draw the architecture of ARM processor and explain its functional units.	13	K2	CO2
13.	a)	Explain in detail about Timer Operation of LPC2148 microcontroller.	13	K2	CO3
		(OR)			
	b)	Discuss about the interfacing and operation of ADC and DAC in LPC2148 microcontroller.	13	K2	CO3
14.	a)	Elaborate the steps to be followed to interface LCD with a processor.	13	K2	CO4
		(OR)			
	b)	Explain how the speed of a DC motor can be controlled with a microcontroller.	13	K2	CO4
15.	a)	Illustrate the function of Interrupt routines in RTOS environment and handling of interrupt source calls.	13	K2	CO5
		(OR)			
	b)	Explain in detail about multiple processes and threads with an application.	13	K2	CO5

PART – C

Q.No.		Questions	Marks	KL	CO
16.	a)	With suitable diagrams and sample codes, illustrate how a stepper motor can be interfaced with processor.	15	K3	CO4
		(OR)			
	b)	Develop a system for any real time application using RTOS.	15	K3	CO5