

CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

BCO601

Sixth Semester B.E./B.Tech. Degree Examination, June/July 2025 Microcontrollers and Embedded Systems

Time: 3 hrs.

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course-outcomes.*

Module – 1			M	L	C
Q.1	a.	Explain the RISC design philosophy and how it differs from CISC architecture and List out its advantage with data flow.	10	L2	CO1
	b.	Discuss the concept of pipelining in ARM processors. How do interrupts effects the pipeline execution explain with one example.	10	L2	CO1
OR					
Q.2	a.	With the help of neat supporting Block diagram explain ARM Cox dataflow model.	10	L2	CO1
	b.	Explain the role of registers and also explain 4 fields of Current Program Status Register (CPSR).	10	L2	CO1
Module – 2					
Q.3	a.	List out all types of data processing institutions in ARM instruction set. Provide examples to illustrate the explanation.	10	L3	CO2
	b.	i) Write a program to add an array of 16-bit numbers and store the 32 bit result in internal RAM. ii) Write a program to find the largest / smallest number in an array of 32 numbers.	10	L3	CO2
OR					
Q.4	a.	Write a C program to find square of the number between (1 – 10) and convert the same using assembly level program.	10	L3	CO2
	b.	i) Write assembly level program to interface a stepper motor and rotate it in clockwise and anticlockwise direction. ii) Write a assemble level program to find factorial of number.	10	L3	CO2
Module – 3					
Q.5	a.	Explain the different purpose of Embedded system with examples.	10	L2	CO3
	b.	Write a assembly level code and structural representation to display hex digits 0 to F on a 7 segment LED interface with an appropriate delay M in between.	10	L3	CO3
OR					
Q.6	a.	Explain different communication interface for embedded system with neat diagram.	10	L2	CO3
	b.	With the help of interfacing diagram write a assembly level program to interface a 4 x 4 keyboard and display the key code on an LCD.	10	L3	CO3
Module – 4					
Q.7	a.	Explain the quality attributes of embedded system with different types.	10	L2	CO4
	b.	Explain state machine model with two example : i) FSM model for Automatic Tea / Coffee vending machine. ii) FSM model for coin operated telephone system.	10	L2	CO4
1 of 2					

OR

Q.8	a.	Explain : i) Sequential Program model ii) Concurrent / Communicating Process model	10	L2	CO4
	b.	Explain automotive communication buses and key players of automotive embedded market concepts.	10	L2	CO4
Module – 5					
Q.9	a.	Explain the concept of task process threads with the help of neat diagram.	10	L2	CO5
	b.	Explain the concept of Dead lock and Dining Philosopher's problem.	10	L2	CO5
OR					
Q.10	a.	Explain message passing concept with neat diagram.	10	L2	CO5
	b.	What is semaphore explain binary semaphore concept with supporting diagram.	10	L2	CO5
