EPCET LIBRARY BANGALORE-49

CBCS SCHEME

USN | | | | | | | | | | |

BEC/BTE/BVL601

Sixth Semester B.E./B.Tech. Degree Examination, June/July 2026
Embedded System Design

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 classification of Embedded System.	10	L1	CO1
	b.	Answer the following : i) Compare RISC and CISC. ii) Microprocessor V/S Microcontroller.	10	L2	CO1
		OR			
Q.2	a.	Explain the following Embedded system components : i) LED ii) 7 Seg Display iii) Relay iv) Buzzer.	10	L1	CO1
	b.	Explain I2C Communication Interface with suitable block diagram and explain steps followed for Communication / Data transfer.	10	L1	CO1
		Module – 2			
Q.3	a.	Explain the characteristics and quality attributes of Embedded Systems.	10	L1	CO2
	b.	Explain Data flow graph and Control data flow graph models in Embedded System Design.	10	L2	CO2
		OR			
Q.4	a.	Write a block schematic of Embedded firmware design (Assembly language based) and development and explain operation of related software's Involved.	10	L1	CO2
	b.	With FSM model, explain the design and operation of automatic tea / coffee vending machine.	10	L2	CO2
		Module – 3			
Q.5	a.	Define Process. Explain in detail Process state transition , States , Process control block.	10	L1	CO3
	b.	i) Explain Preemptive scheduling. ii) Determine average turnaround time and average waiting time if process P1, P2 , P3 with estimated completion time of 1.2 , 6 , 7 millisecond enter ready queue together and later P4 with a completion time of 2 m sec enters ready queue afrer 2 msec.	10	L2	CO3
		OR			

Q.6	**a.**	Explain the following Task Communication techniques : i) Mailbox ii) Queuing iii) Signaling.	**10**	**L1**	**CO3**
	b.	Explain the concept of deadlock with a neat diagram. Mention the different conditions which favours a deadlock situation.	**10**	**L2**	**CO3**
		Module – 4			
Q.7	**a.**	Explain ARM based embedded device with suitable block diagram.	**10**	**L1**	**CO4**
	b.	Explain following with respect to ARM Processor : i) Program status register ii) Processor modes iii) Registers.	**10**	**L1**	**CO4**
		OR			
Q.8	**a.**	Explain ARM core data flow model with suitable block diagram.	**10**	**L1**	**CO4**
	b.	With neat block diagram, explain Embedded system software and functions of each software blocks.	**10**	**L1**	**CO4**
		Module – 5			
Q.9	**a.**	Explain following instructions with suitable examples : i) BLX ii) RRX iii) BIC iv) TST.	**10**	**L2**	**CO5**
	b.	Write a program to arrange a series of 32 bit numbers in ascending order.	**10**	**L2**	**CO5**
		OR			
Q.10	**a.**	Explain following instruction with suitable example : i) MLA ii) ORR iii) ROR iv) MVM	**10**	**L2**	**CO5**
	b.	Write a C program to display Hex digit O – F on 7 segment LED interface with suitable interfacing diagram.	**10**	**L2**	**CO5**

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