Total No. of Questions: 10]	290	SEAT No. :
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B.E. (Computer Engineering) EMBEDDED AND REAL TIME OPERATING SYSTEM 2015 Course) (Elective - HI) (Semester - H) (410252(C))

(2015 Course) (Elective - III) (Semester - II) (410252(C)) Time: 2½ Hours] [Max. Marks: 70 Instructions to the candidates: Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10. Neat diagrams must be drawn wherever necessary. *2*) Figures to the right side indicate full marks. 3) Assume suitable data if necessary. What is the use of ROM image in Embedded system? Draw a structure **Q1)** a) of ROM image and explain various components embedded inside it. [5] How does ARM micro-controller differ from a SHARC processor? b) Justify your answer. [5] Describe in detail different forms of memories and their use in embedded **Q2)** a) systems. [5] To design sophisticated embedded systems for high computing b) performance, which performance metrics are used? Explain. [5] Explain types of serial communication with examples. **Q3)** a) Enlist various Internet enabled system protocols and explain one with its b) features. OR Explain why PCI/X buses are used for high speed data transfer? List the **Q4)** a) major features of PCI/X bus. [5] Describe and compare RS232C and SDIO Devices **b**) [5] **Q5)** a) How to represent Precedence constraints and data dependency among real-time tasks? Explain with diagram. [6] How Rate Monotonic (RM) algorithm checks the schedulability of tasks? What are limitations of RM algorithm. [6] What is RTOS? Differentiate Hard versus soft real-time systems and c) their timing constraints. [4]

OR

06)	۵)	Differentiate between fixed amounts and dynamic amounts, sebaduling
Q6)	a)	Differentiate between fixed priority and dynamic priority scheduling algorithms in real-time systems. Give one example of each. [6]
	b)	What are various Temporal parameters of real-time processes? List and
	0)	explain. [6]
	c)	What are various Real-time requirements in the domain of Signal
	,	processing or Multimedia. [4]
Q7)	a)	With the help of example, demonstrate the concept of critical section. [6]
	b)	What is priority inversion problem in real-time systems? How this problem
		can be solved? Give details. [6]
	c)	What is interrupt latency? Justify its role in handling interrupts in RTOS
		environment. [4]
20)	,	OR
Q8)	a)	Explain with example Resource conflicts and blocking. [6]
	b)	What is Semaphore? How does it help in resource sharing in RTOS
	a)	Kernel? [6]
	c)	How interrupts are handled in RTOS environment? [4]
Q9)	a)	Draw and explain model of real-time communication with related
27)	u)	terminologies. [6]
	b)	Explain priority-based service disciplines for switched networks in
	,	multiprocessor systems for real-time communication. [6]
	c)	Describe the embedded software development process. [6]
		OR
Q10) a)	What are issues in resource reservation. Explain Resource reservation
		protocol with diagram. [6]
	b)	Explain with example Validation and debugging in an embedded system.
	,	[6]
	c)	List capabilities of commercial real-time operating systems. Enlist the features of RTLinux. [6]
		features of RTLinux. [6]
		2 6.
		features of RTLinux. [6]
[556	[1]-69	92

