M.Sc. Third Semester (Applied Electronics) (New) (CBS)

15038 : Elective - II : Embedded System Design : 3 AE 4

P. Pages : 2 | AU - 3192

Time : Three Hours | Max. Marks : 80

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Notes : 1. Answer **three** question from Section A and **three** question from Section B.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answer necessary with the help of neat sketches.
5. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1.	a)	What are the embedded system design and co design issues in cell phone system development process?	7
	b)	What is an emulator? What are the various components of an emulator?	7
2.	a)	Describe various software tools used for development of embedded system.	7
	b)	Explain the role of host and target system in embedded system.	7
3.	a)	Explain the reason why the system with conventional operating system fails to responds to real time problems. Also explain how these are taken care in RTOS.	7
	b)	Differentiate between binary semaphore and mutex? Are semaphores provided by hardware?	6
4.	a)	Compare task, process and thread.	7
	b)	Discuss with suitable example application of semaphore in RTOS. A counting semaphore was initialize to 10. Then 6P (wait) operations and 4V (signal) operations were completed on this semaphore. Calculate resulting value of the semaphore.	6
5.	a)	What are the events? How are they different from message queues?	7
	b)	Explain various dynamic Memory management techniques in RTOS. Explain how Process P1 of 20KB is allocated in Memory of size 10, 30, 20 KB using first, next and best fits memory management techniques.	6
6.	a)	List any two ways in which an RTOS handles the ISRs in multitasking environment.	7
	b)	Compare scheduling strategies, real time scheduling, round robin mode and time splicing scheduling.	6

SECTION - B

7.	a)	Explain ARM instruction set architecture.	7
	b)	Draw the block diagram of PIC microcontroller. Discuss the need of Watchdog Timer.	6

8.	a)	Explain the operating modes of ARM.	7
	b)	Explain interrupt structure of 8051. Explain IE register format.	6
9.	a)	Describe:- i) Cross compiler ii) Simulator of Embedded System	4+3
	b)	What are preemptive and non-preemptive scheduling policies? List various preemptive and non-preemptive scheduling algorithms.	4+3
10.	a)	Explain role of assembler and cross compiler in embedded system.	7
	b)	Describe in brief various components of integrated development environment.	6
11.		Write short note on:- i) I^2C Bus ii) CAN Bus iii) IEEE 11491	5+5+4
12.		Describe Bluetooth Communication System with associate Protocol.	14

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