Student	Exam	No.	

GANPAT UNIVERSITY

B. Tech. Semester VII - Electronics & Communication Engineering Regular Examination December - 2013 2EC704 Embedded Systems

Time: 3 Hours Total Marks: 70

INSTRUCTIONS:

- 1. Attempt all questions.
- 2. Answers to the two sections must be written in separate answer books.
- 3. Figures to the right indicate full marks.
- 4. Assume suitable data, if necessary.

SECTION - I

		SECTION-1	
Que1	(A) (B)	Explain ARM core dataflow model in detail with the help of diagram. Illustrate process transition through various queues.	7 5
	Hosele	mastate process transition through various queees.	3
Que1	(A)	Describe the following ARM modes with their register banking feature. a. User mode b. System mode c. FIQ mode d. IRQ mode	7
	(B)	Tabulate the dissimilarities between thread and process.	5
Que2	(A)	Given an analog input signal whose voltage ranges from -5 to 5 V, and a 10-bit digital encoding, calculate the correct encoding for -2.44 V, and then trace the successive approximation approach to find the correct encoding.	6
	(B)	Explain embedded software at various levels of embedded system design. OR	5
Que2	(A) (B)	Priority based preemptive scheduling is implemented by kernel. Three processes with process IDs P1, P2 and P3 with estimated completion time of 8, 12, 16 mili-seconds and priorities 5, 3, 7 respectively enter the ready queue together. New process P4 with the estimated completion time of 4 ms and priority level 2 enters the 'Ready' queue after 5 ms of execution of P2. Find out waiting time and turn-around time for each process. Also find average turn-around time. Operating system is Windows CE, having 255 priority levels where 0 indicates Highest priority level and 255 is the lowest. What are the features of port based I/O and bus based I/O? Write a brief note on the types of bus based I/O.	5
Que-3	(A) (B)	What is mode interworking of in ARM? Why is it a good practice to utilize interworking feature in programming the ARM? Define following: a. Firm Real Time System b. Hard Real Time System	4

SECTION II

Que4	(A)	Explain IEEE 802.11 Wireless LAN standard in detail.	7
	(B)	Illustrate - Digital Camera Software Components	5
Que4	(A)	How System-On-Chip differs from Microcontroller? Provide a detailed	7
	(B)	explanation with diagram. Explain software development process for Embedded System. OR	5
Que5	(A)		6
	(B)	What are the advantages, disadvantages and limitations of I2C protocol?	5
Que5 ((A)	As an Embedded system designer, enlist the hardware components and software techniques for following interfacing. Justify your selection – There are total 8 peripherals to be connected to processor. They may request	6
		to processor simultaneously also. Processor has single pin for receiving interrupt from device. Number of peripherals can increase in near future. Each peripheral has its different importance level. One of the peripherals has frequent requirement of large data transfer to/from memory.	
	(B)	Explain strobe/handshake compromise protocol with diagram.	5
Que6	(A)	Define the following terms: a. Context-switching b. Firmware	4
	(B) (C)	c. Scheduler Tabulate the differences between real time kernel and general purpose kernel Compare different memories in tabular format based on their characteristics – programming speed and storage permanence. List the worst and best choice of memory for both characteristics.	4

-BEST OF LUCK-----