Seat no._____

GANPAT UNIVERSITY

B. Tech. Semester VII Electronics and Communication Engineering

Regular Examination NOV/DEC-2012

EC705 Embedded System

Time: 3 Hrs.] **[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

1	(A)	Explain time based pre-emptive scheduling policies	4
	(B)	Tabulate the differences between real time kernel and general purpose kernel.	4
	(C)	Define following terms with respect to real time embedded system. 1. Release time 2.Deadline 3. Aperiodic process 4.Scheduler	4
		OR	
1	(A)	Demonstrate critical section problem when processes utilize shared resources. Provide at least one solution to this problem.	6
	(B)	What are the process states? Explain different valid state transitions.	6
2	(A)	A processor generally has single pin called IntA, which is used by peripherals to request service. If many peripherals requests service simultaneously, how will the processor decide the priority? Explain using diagram.	6
	(B)	Explain peripheral to memory transfer with DMA controller. Assume that system is using vectored interrupt.	5
		OR	
2	(A)	Compare fixed and Daisy-chain arbitration.	6
	(B)	Write a short note on Universal Serial Bus protocol	5
3	(A)	Specify the features which increase the code density in ARM processor.	4
	(B)	What are the indications of nomenclature letters in ARM7**TDMI.**	4
	(C)	Briefly mention the features of Arm Thumb mode.	4

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SECTION-II

4 (A) Define embedded system. List the features of embedded systems 6

(B) Explain watchdog timer with example of ATM 6

OR

4 (A) Define the following terms related to embedded system : 6

1. Linker
2. Cross Compiler
3. Instruction set emulator
4. Emulator
5. NRE cost
6. Interrupt Latency

(B) Compare Assembly level language and Structured languages in accordance with embedded system programmer's view. 6

5 (A) Define the following terms: 6

1. Write ability
2. Storage performance

(B) Write short note on different types of ROM 3

(C) Explain serial port operation. 2

OR

5 (A) Explain the I^2C bus with it's electrical connections 6

(B) Calculate correct encoding of 5V, where Vmin=0V,Vmax=15V and n=8 bits 5

6 (A) Explain classification of real time embedded systems based on their punctuality for deadline. 4

(B) Define Latency and throughput. Justify the following for embedded systems- 4

Throughput ≠ Latency * Number of tasks.

(C) With the help of diagram, briefly explain embedded system software development process. 4

End of Paper