Student Exam No._____

GANPAT UNIVERSITY

B. Tech. Semester: VII Electronics & Communication Engineering

Regular / Remedial Examination Nov – Dec 2015

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

Que.-1	(A)	Write short note on the following: 1. OLED 2. Stepper motor	6
	(B)	List out features and characteristics of embedded systems.	2
	(C)	Distinguish between compilation and cross compilation.	2
	(D)	What are the challenges in the field of embedded system recently?	2

OR

Que.-1	(A)	Write short note on following: 1. SRAM 2. Flash Memory	6
	(B)	Define the following terms: 1. GUI 2. Linker 3. Simulator 4. Emulator	4
	(C)	List out application areas of Embedded systems.	2
Que.-2	(A)	An analog input signal whose voltage range from 0 to 15V, and an 8-bit digital encoding, Calculate the correct encoding for 5V.	4
	(B)	Write short note on I2C protocol.	4
	(C)	Give the differences between Harvard, Super Harvard and Von Neumann architecture.	3

OR

Que.-2	(A)	Give the full details of Zigbee protocol.	4
	(B)	Write short note on SPI protocol.	4
	(C)	Explain Infrastructure mode in WLAN.	3
Que.-3	(A)	PC is not considered to be an embedded system. Justify your answer.	4
	(B)	Which are the steps to be taken into consideration when there is the need to design systems which are power limited?	4
	(C)	Briefly describe Cache memory.	2
	(D)	Discuss Parallel arbitration scheme in brief.	2

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SECTION-II

Que.-4 (A) Write short note on the following for Non-preemptive methods of Scheduling with example: 6

1. Co-operative Scheduling
2. Shortest job next

(B) Write an assembly language program for ARM to calculate $3X^2 + 5Y^2$, where X = 6 and Y = 4. 4

(C) Give the difference in operation for given following instructions: 2

1. SUB R3, R4, R5 2. SUBS R3, R4, R5

OR

Que.-4 (A) Write short notes on the following for preemptive methods of Scheduling with example: 6

1. Round Robin Scheduling
2. Pre-emptive priority

(B) Write an assembly language program for ARM that calculates the factorial of 10. 4

(C) Given the contents of R3 and R4 as, R3 = 0x0FF00FF0, R4 = 0x0FF00FF0 and R0 = 0. Find the values in R1, R2 and R5 at the end of the sequence of instructions shown. 2

1. EORS R1, R3, R4
2. ANDS R5, R3, R0

Que.-5 (A) List out functions performed by an OS and explain any two of them. 4

(B) Discuss on Race condition with example. 4

(C) Discuss for three profiles of ARM CORTEX. 3

OR

Que.-5 (A) Which are conditions attributed to the occurrence of deadlocks and which are the ways to dealing with them? 4

(B) What is the priority inversion? Give solutions for that. 4

(C) Give the detail for each bit of current program status register (CPSR). 3

Que.-6 (A) Explain about the following directive with example. 4

1. AREA
2. DCW
3. EQU
4. RN

(B) Explain types of Real time tasks based on release time and deadline. 3

(C) Define the following terms: 3

1. Application programming interface
2. POSIX (Portable operating system interface)
3. Tardiness

(D) Feature of abstraction that makes computer usage a pleasure for all kinds of users. Justify your answer. 2

END OF PAPER