M.E. First Semester (Electronics & Tele.) (Full Time) (C.G.S.- New)

13335 : Elective-I : Real Time Embedded System : 1 ENTC 5

P. Pages : 2

Time : Three Hours

AW - 3630

Max. Marks : 80

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.

1. a) Explain the following terms used in embedded system design. **6**
i) GPP ii) ASIC
iii) SOC

b) Draw and explain the block diagram of 32-bit ARM processor. **7**

OR

2. a) Explain the components typical embedded system. **6**

b) Design 4K×16 RAM using 2K×4 RAM. **7**

3. a) Write a assembly language program to computes sum of 05 numbers (each 32-bit) held in successive memory locations. Register R3 holds count and R4 holds final result. R5 is memory pointer to numbers in memory. **6**

b) Explain how we can change from native ARM mode to Thumb mode and vice-versa. **7**

OR

4. a) Explain in detail, What are C data types supported by ARM processor. **6**

b) Describe the features of the start-up code provide in ARM-C cross compiler. **7**

5. a) Draw the interfacing of LCD unit with LPC 2148. Write a program to display "ABCD" on first line of LCD in the middle and "1234" in middle of second line. Draw the necessary flow chart. **14**

OR

6. Write a code to display input voltage on LCD. Input voltage signal is given to AD 0.1 (P0.28) of LPC 2148, convert into digital signal value and same is displayed on LCD. Draw the necessary flow chart. **14**

7. a) What is semaphore? Explain the different types of it? Where it is used? **6**

b) What is task control block? Explain the structure of TCB. **7**

OR

8.	a)	What should be the goal of an OS?	6
	b)	Explain interrupt handling mechanism in detail.	7
9.	a)	Explain the features of RTOS?	7
	b)	Explain earliest deadline first algorithm with suitable example.	7

OR

10.	a)	Explain Rate monotonic algorithm.	7
	b)	Explain priority ceiling protocol with suitable example.	7
11.	a)	Explain Hardware-Software Co-design in an embedded system.	6
	b)	Explain typical embedded system architecture with example.	7

OR

12.	a)	Explain validation and debugging of embedded system with example.	6
	b)	Enlist the difference of Harvard architecture and Von-Neumann architecture.	7

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