

21/2/2015 ME Elex - Sem II (RBT) - ES

QP Code : 30228**(3 Hours)****[Total Marks: 100]****N.B.: Answer any four questions.**

1. a) Explain use of waterfall model in the design of an embedded system. [5]
 b) Distinguish between General Purpose OS and Real time OS with an example. [5]
 c) Draw and explain data frame format of CAN bus. [5]
 d) Discuss role of CPSR – current program status register, in ARM processor. [5]
2. a) Design a program model for Automatic seat belt warning system for a four wheeler. [5]
 b) How does a semaphore facilitates IPC i.e. inter process communication in RTOS? [5]
 c) Draw and explain clock generator circuit in MSP 430? [10]
 What is the role of watchdog timers?
3. a) Explain ARM-THUMB mixed mode programming used in ARM7TDMI. [10]
 b) What is priority inversion? Discuss various protocols used to resolve this in RTOS. [10]
4. a) Draw and explain architecture of ARM processor. Discuss various operating modes of ARM processor. [10]
 b) Distinguish between i) SRAM and DRAM [5]
 ii) Process and thread [5]
5. a) Consider the following task set: Find out RMS and EDF scheduling timing diagram and comment. [10]

Process	Period	Execution time	Deadline
P1	15	4	50
P2	10	3	55
P3	12	5	45
P4	8	2	35

- b) What are the different states of the task in a real time operating system and how does a task transits from one state to another? Discuss tests of schedulability of the tasks. [10]
6. Write short notes on any two: [20]
 a) Task Synchronization Issues.
 b) Low power modes of MSP430
 c) ATM Machine
 d) Digital Camera