Total No. of Questions : 10]

SEAT No. :

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[5154]-710-B

B.E. (Information Technology)

REAL TIME & EMBEDDED SYSTEMS

(2012 Course) (Semester -II) (End Sem.) (Elecitve-IV) (414464B)

Time : 2½Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answers Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) What are the typical characteristics of embedded system and challenges in embedded system design? Discuss in brief. **[6]**

b) What are main features of CAN2.0 bus standards? **[4]**

OR

Q2) a) Draw & explain general architecture of embedded system & explain components in it. **[6]**

b) Comment on 'Networking buses in embedded system'? **[4]**

Q3) a) Draw SHARC core processor block diagram and explain SIMD engine (PE) composition and operation in brief. **[6]**

b) Explain I2C bus architecture and its operation in detail. **[4]**

OR

Q4) a) Draw general architectural block diagram of ARM processor. List main features of ARM processor. **[6]**

b) Compare and contrast I2C, CAN serial buses with respect to features, data rates, wire length and no of devices it can connect. **[4]**

Q5) a) Use RMS scheduler For scheduling a periodic task set of T1(2,4) & T2 (4,8). Perform schedulability check & comment on whether given task set is schedulable & schedule produced is feasible. **[10]**

b) Discuss the assumption for clock driven scheduling and explain cyclic scheduler in detail. **[8]**

OR

P.T.O.

Q6) a) Use EDF scheduler For scheduling a periodic task set of T1 (1, 3, 3) & T2 (4, 6, 6). Perform schedulability check & comment on whether given task set is schedulable & schedule produced is feasible. **[10]**

b) Write a note on 'classification of task'. **[8]**

Q7) a) What is deadlock & explain how to avoid deadlock with priority ceiling protocol. **[8]**

b) State & explain priority inversion problem with appropriate example & name protocols used to remove this problem. **[8]**

OR

Q8) a) Explain resource reclaiming algorithm in detail. **[8]**

b) Explain algorithm for scheduling aperiodic tasks & periodic tasks. **[8]**

Q9) a) How Real Time Operating System is different than Operating System, explain with respect to features & characteristics. **[8]**

b) Write note on commercial RTOS. **[8]**

OR

Q10)a) How Real Time Database is different than Database, explain with respect to features & characteristics. **[8]**

b) Write note on commercial Real Time Database. **[8]**

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