Total No. of Questions :12] [Total No. of Pages :2

P1071

[3864]-245
B.E. (Electronics)
EMBEDDED SYSTEM DESIGN
(2003 Course)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) *Answer any 3 questions from each section.*
2) *Answers to the two sections should be written in separate books.*
3) *Neat diagrams must be drawn wherever necessary*
4) *Figures to the right indicate full marks.*
5) *Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.*
6) *Assume suitable data, if necessary.*

SECTION - I

Q1) a) Explain the following design metrics of an embedded system **[10]**

i) Time to market ii) Latency

iii) Speed up iv) NRE - cost

b) Explain the protocol architecture of IrDA. **[8]**

OR

Q2) a) What is an embedded system ? Explain.How they are classified? Explain the Hardware blocks of an Embedded system. **[10]**

b) Explain the bluetooth communication protocol. **[8]**

Q3) a) Describe the processor selection criterion for an Embedded system giving suitable examples. **[10]**

b) What are the characteristics of a shared data bug? **[6]**

OR

Q4) a) Explain the activities of an embedded operating system. **[8]**

b) Explain the software architecture of an embedded system. **[8]**

Q5) a) Explain the productivity tools for developing software systematically. **[8]**

b) What is re-entrant function? State the rules to decide whether the function is re- entrant. **[8]**

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OR

Q6) a) Explain the different types of ROM and RAM devices used in embedded systems. **[8]**

b) What is a task? What are different states of tasks? Draw the task state diagram. **[8]**

SECTION - II

Q7) a) Explain the methods of protection of shared data. **[7]**

b) Explain the following :

i) First-in-First-out.

ii) Round-Robin.

iii) Round-Robin with priority. **[7]**

c) Explain the interrupt routines in an RTOS environment. **[4]**

OR

Q8) a) Explain in detail what is a pipe and event in RTOS and where these are used. Give the implementation of any of these in embedded 'C'. **[8]**

b) What are the different time-delay functions ? Explain. **[6]**

c) Explain the deadly embrace. **[4]**

Q9) a) What is RT Linux Module? **[4]**

b) What is the function calls provided for timer management in RT Linux. **[6]**

c) How does a mail box differ from a Queue Message in µc/os -II. **[6]**

OR

*Q10)*a) Explain the following for its use in µc/os -II along with the implementations in embedded C. **[8]**

i) Task create

ii) Timer

iii) Message queue

b) Compare any four commercial mobile computing operating systems. **[8]**

*Q11)*Explain the embedded system used in Digital Camera. **[16]**

OR

*Q12)*a) Explain with a neat diagram of an Adaptive Cruise control system in a car. **[8]**

b) Explain the basic features of smart card hardware. **[8]**

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