Total No. of Questions : 8]

SEAT No. :

P3239

[Total No. of Pages : 2

[4859] - 1051

B.E. (Electronics) (Semester - I)

EMBEDDED SYSTEMS AND RTOS

(2012 Pattern) (Elective - I) (End - Semester)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates :

1) ***Answer any 4 questions.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if necessary.***
4) ***Neat diagrams must be drawn wherever necessary.***
5) ***Use of non programmable electronic pocket calculators is allowed.***

Q1) a) Define critical section macros and explain critical section methods in µC/OS-II. **[7]**

b) What is time to market? Draw and explain simplified revenue model & also calculate losses if product is delayed by 4 and 8 weeks, assuming product life to be 52 weeks. **[7]**

c) Explain embedded development life cycle stages. **[6]**

OR

Q2) a) Define the context Switching. What are the steps involved in µcos -II context switching? Why it puts additional burden on OS? **[7]**

b) Explain with neat diagram of adaptive cruise control of vehicle with its hardware and software requirements. **[7]**

c) What do you understand by the term "clock tick" in RTOS? Explain the time management functions in µcos - II. **[6]**

Q3) a) How does a Semaphore solve the shared resource problem? Explain the µC/OS-II services offered for semaphore management. **[8]**

b) Explain OSMutexCreate() function. **[8]**

OR

P.T.O.

Q4) a) State the structure of Event Control Blocks? Show how Tasks and Interrupt service routines (ISR) can interact with each other through an ECB. **[8]**

b) Explain event Flag management. **[8]**

Q5) a) Explain Queue management in μcos - II RTOS. **[8]**

b) Explain porting of μcos - II RTOS for any controller. **[8]**

OR

Q6) a) Explain the various kernel objects for interprocess communication in μcos - II. **[8]**

b) Explain Memory management in μcos - II RTOS and draw MCB structure. **[8]**

Q7) a) Explain building a file system in embedded Linux. **[8]**

b) Explain the BIOS and the role of boot loader in embedded Linux. **[10]**

OR

Q8) a) Explain the concept of loadable device driver for Linux kernel. **[8]**

b) Explain the process of booting on embedded system using U_boot. **[10]**

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