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06EC762

Seventh Semester B.E. Degree Examination, June/July 2011
Real Time Systems

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Define the real time system? Explain the computer control system showing communication tasks with the block diagram. **(10 Marks)**

b. Explain the following types of programming:
i) Multitasking ii) Real time **(06 Marks)**

c. Differentiate between clock based and event based tasks. **(04 Marks)**

2 a. Explain the sequence control by taking the example of a simple chemical reactor vessel. Show the block diagram of a typical chemical batch process. **(10 Marks)**

b. Explain the dual computer scheme. **(05 Marks)**

c. List out the responsibilities of a control engineer in designing the suitable computer system. **(05 Marks)**

3 a. Write the block diagram of a single chip micro computer and explain the following blocks:
i) Interrupt controller ii) Series communication iii) EPROM **(06 Marks)**

b. Write the block diagram of an interrupt vectoring using priority encoding circuit and explain. Show the timing diagram of simplified READ operation. **(10 Marks)**

c. Explain the following : **(04 Marks)**
i) HDLC protocol ii) Asynchronous and synchronous transmission techniques.

4 a. A stream of data in character form is received from a remote station over a serial link. The data has to be processed character by character by a routine process item until the EOT character is received. The EOT must not be processed. Write a simple loop structure using EXIT statement. **(06 Marks)**

b. List out some major requirements that CUTLASS language has to meet. **(08 Marks)**

c. Explain the use of co-routines showing an example. **(06 Marks)**

PART – B

5 a. Explain the typical structure of a RTOS. **(08 Marks)**

b. What is task management? Explain the typical task state diagram. **(08 Marks)**

c. Write notes on : i) Semaphore ii) Swapping. **(04 Marks)**

6 a. Explain the following loss system commands :
i) DTRC01 ii) INRC02 iii) OVCC01 iv) OURC01
v) FMRC01 vi) SCRC11 vii) DORC04 viii) RMRC01 **(08 Marks)**

b. Define the following :
i) Live lock ii) Dead lock iii) Indefinite postponement **(06 Marks)**

c. Show the OS Kernel Hierarchy and briefly explain them. **(06 Marks)**

7 a. Considering a system comprising of several hot air blowers. Prepare a specificator document of the same. (Assume planning phase has been completed) **(10 Marks)**

b. Write the flow chart for a single program approach. **(05 Marks)**

c. Explain the concept of data sharing using common memory. **(05 Marks)**

8 a. Show the outline of abstract modeling approach of Ward and Mellor and explain. **(10 Marks)**

b. Differentiate between Ward Mellor and Hatley and Pirbhai methodologies. **(05 Marks)**

c. Explain the CFDO drying over controller using Hatley and Pirbhai notation. **(05 Marks)**

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