[5353]-21

T.E. (Computer Engineering)
SYSTEM PROGRAMMING & OPERATING SYSTEM
(2008 Pattern) (Theory)

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

Instructions to the candidates:

1) *Solve Q. 1 or 2, Q. 3 or 4, Q. 5 or Q. 6 from Section - I and Q.7 or 8, Q.9 or Q.10, Q. 11 or 12 from Section - II.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right indicate full marks.*
4) *Assume suitable data, if necessary.*
5) *Answers to the two Sections should be written in separate books.*

<u>SECTION - I</u>

Q1) a) What are different databases that are used for design of PASS-1 of a two pass Assembler. Give the format for each one of these. **[8]**

b) What is macro? When we should use macro? What are the advantages of macros. **[8]**

OR

Q2) a) Explain the concept of language processor. **[8]**

b) What are the assembler directives? Explain with example. **[8]**

Q3) a) Explain overlay structure. What is dynamic binding? **[8]**

b) Explain in brief compile and go scheme. What are advantages and disadvantages of this scheme. **[8]**

OR

Q4) a) Explain in brief a direct linking loader. **[8]**

b) What is a loader? What are its basic functions? **[4]**

c) Explain the term static linking and dynamic linking. **[4]**

Q5) a) Explain Process state transition diagram. **[6]**

b) What is a thread? Explain difference between process and a thread. **[6]**

c) Explain the concept of multiprogramming and real time operating system. **[6]**

OR

Q6) a) Explain the contents of process control block. **[6]**

b) Explain following system calls. **[6]**

    i) exec

    ii) fork

    iii) wait

c) What do you mean by preemption'? Explain any 2 preemptive scheduling algorithms with example. **[6]**

SECTION - II

Q7) a) Define deadlock. What are methods for handling deadlock? Explain any one method in detail. **[10]**

b) Write a solution to reader writer problem using semaphores. **[8]**

OR

Q8) a) Explain the Producer consumer problem. Write a solution to problem using monitors. **[10]**

b) Explain types of message passing system used in interprocess communication. **[8]**

Q9) a) With proper examples explain memory allocation strategies first fit, best fit and worst fit. Also explain their advantages and disadvantages. **[8]**

b) What is paging? Explain the process of address translation in paging. **[8]**

OR

Q10) a) What is TLB? Explain the paging system with the use of TLB? What are the advantages of TLB. **[8]**

b) Explain page replacement algorithms with example. **[8]**

Q11) a) What is RAID? Explain RAID levels with their advantages and disadvantages. **[8]**

b) With respect to file system explain free space management. What are the techniques for free space management. Explain in Detail. **[8]**

OR

Q12) a) Explain in details File allocation methods with their advantages and disadvantages. **[8]**

b) Explain different disk scheduling algorithms with example. **[8]**

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