Seat No.

[4459] – 258

T.E. Computer Engineering (Semester – II) Examination, 2013
(2008 Course)
SYSTEMS PROGRAMMING AND OPERATING SYSTEMS (310252)

Time : 3 Hours   Max. Marks : 100

Instructions :   1) Answer **any 3** questions from **each** Section.
2) Answers to the **two** Sections should be written in **separate** answer books.
3) **Neat** diagrams must be drawn **wherever** necessary.
4) **Black** figures to the **right** indicate **full** marks.

SECTION – I

1. a) What are different language processing activities ?   **4**

   b) What is forward reference ? How it is handled in single pass assembler ?   **6**

   c) Draw the flow chart for pass one of a two pass assembler.   **8**

OR

2. a) Enlist the steps involved in handling macro definition inside the macro of one pass macro processor.   **6**

   b) What are the differences between positional and keyword parameters ?   **4**

   c) Which data structures are required in the design of 2 pass macro processor give their formats ?   **8**

3. a) How the direct linking loader handles relocation and linking ?   **8**

   b) What are the advantages of overlay structure ? Explain with example.   **8**

OR

4. a) What is the need of DLL ?   **4**

   b) Draw flow chart for pass-1 of direct linking loader.   **8**

   c) With respect to windows explain the terms static and dynamic binding. Discuss merits and demerits of the same.   **4**

P.T.O.

5. a) What are the functions of an operating system ?   **4**

   b) Consider following set of processes   **12**

Process	Arrival Time	Burst Time
P1	0	4
P2	2	5
P3	3	3
P4	6	3
P5	10	5

   Calculate waiting time, turnaround time for the FIFO, SJF, RR with 3 as time slot.

                       OR

6. a) What are the benefits of system calls ? What is the use of fork() and exec() system calls ? Explain with example.   **6**

   b) Write short notes on **any three**.   **10**
      1) Distributed OS
      2) Multiprogramming
      3) Real time scheduling
      4) Library functions.

                       SECTION – II

7. a) What is Mutual Exclusion ? What are hardware approaches for Mutual Exclusion ?   **8**

   b) What is inter process synchronization ? Write solution for Producer consumer problem using semaphores.   **8**
                       OR

8. a) How monitors are different from semaphores ? Explain.   **8**

   b) Give solution to bounded-buffer producer consumer using counting semaphores.   **8**

9. a) How bankers algorithm can be used to avoid deadlock ? Explain with an example. **8**

   b) Explain Deadlock detection approach with proper example. **8**

   OR

10. a) Explain Fixed and dynamic Memory Partitioning technique with its advantages and disadvantages. **8**

    b) What is segmentation? How segmentation is implemented in operating system ? **8**

11. a) What are the differences between SCAN and C-SCAN algorithms ? Explain. **8**

    b) Consider following page reference string

    1, 3, 4, 2, 1, 5, 2, 1, 6, 3, 7, 6, 3, 1, 2, 3, 7

    How many page fault would occur for LRU and Optimal replacement algorithms assuming 3 frames ? **10**

    OR www.sppuonline.com

12. a) What is RAID ? Explain different RAID levels. **8**

    b) With respect to file system explain free space management. **10**

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