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Seat No.	
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**T. E. (Computer) (Semester – II) Examination, 2014
SYSTEMS PROGRAMMING AND OPERATING SYSTEMS
(2008 Course)**

Time : 3 Hours

Max. Marks : 100

- Instructions :** 1) Answer **any three** 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) Black figures to the **right** indicate **full** marks.
 5) Assume suitable data, **if** necessary.

SECTION – I

1. a) What are the tasks of analysis and synthesis phase of language translator ? 6
- b) What are the features of assembly language ? 4
- c) Differentiate between literal and immediate operand. 6

OR

2. a) Define Macro. What are the advantages of macro facility ? How they are different from functions ? 6
- b) Draw flow chart for single pass macro processor to handle definitions inside definitions. 10
3. a) With the help of diagram explain the general loader scheme. 6
- b) Draw the flow chart for Pass II of direct linking loader. 10

OR

4. a) What is the use of overlay structure ? Explain with an example. 8
- b) What is the need of DLL ? How dynamic linking can be done with or without import ? 8
5. a) What are system calls ? Enlist major category of system calls. 6
- b) What are different structures of operating system ? Describe. 12

OR

6. a) Describe various processor scheduling methods. 12
- b) Describe the various features of UNIX OS. 6

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SECTION – II

7. a) Explain the concept of monitor with neat diagram. Implement a solution to bounded buffer producer/consumer problem using Monitor. **8**
- b) What are the difficulties that may arise when a process is rolled back as a result of deadlock ? **4**
- c) Explain in brief how message passing mechanism is used for synchronization. **6**

OR

8. a) What is critical region? Explain in detail. **6**
- b) Explain how mutual exclusion is achieved with hardware support using special machine instructions. State the advantages and disadvantages of using special machine instruction approach. **8**
- c) State the necessary conditions for deadlock occurrence in a system. **4**
9. a) Compare the following memory management techniques on their strengths and weaknesses- fixed partition, dynamic partition, simple paging, simple segmentation, Virtual memory management, Virtual memory segmentation. **10**
- b) State and explain different memory management requirements. **6**

OR

10. a) Explain the following terms in brief **8**
- i) Working set model ii) Thrashing iii) Lazy swapper iv) Compaction.
- b) Consider the following address register with 100 bytes page.
0100, 0432, 0101, 0612, 0102, 0103, 0104, 0451, 0256, 0611, 0102, 0103, 0104, 0610, 0103, 0234, 0104, 0321, 0613.
Calculate page faults 1) LRU 2) FIFO 3) Optimal
Frame size is 3. Specify which algorithm is better ? **8**
11. a) Describe any four types of file organizations. **8**
- b) Describe the 3 methods of record blocking with the help of neat diagrams. **8**

OR

12. a) The requested tracks in the order received are
55, 58, 39, 18, 90, 160, 150, 38, 184.
Starting track is 100. Perform the computation for the following disk scheduling algorithm : **8**
- i) SSTF ii) FCFS iii) C-SCAN
- b) What is RAID ? Explain the advantages and disadvantages of RAID. Also explain seven RAID levels in brief. **8**

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