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B. Tech. 5th Semester (CSE) Examination,

December-2015

Principles of Operating System

Paper-CSE-301-F

Time allowed : 3 hours] [Maximum marks : 100

Note : Attempt five questions. Question No. 1 is compulsory.

Attempt one question from each section.

1. Explain the following :

- (a) Differentiate between Multiprogramming and Multiuser Operating System.
- (b) What are buffering and spooling ?
- (c) Explain semaphores.
- (d) What is I/O Hardware ? 4×5=20

Section-A

- 2. (a) Explain Operating System and its type in detail. 10
- (b) (i) Differentiate between process and program. 5
- (ii) What is process scheduling ? 5

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3. (a) Explain System programs and System calls. 10
- (b) Explain Priority scheduling and Multilevel feedback queue scheduling. 10

**Section-B**

4. Explain Paging and Segmentation techniques. 20
5. Consider the following page reference string :  
1, 2, 3, 1, 4, 2, 1, 2, 1, 3, 2, 4, 4, 3, 4, 1, 2, 3.

How many page faults would occur for the following replacement algorithms assuming four frames ? All frames are initially empty :

- (i) LRU
- (ii) FIFO
- (iii) Optimal. 20

**Section-C**

6. (a) Explain file system and its types. 10
- (b) Explain Semaphore in detail. 10
7. (a) What are advantages of a distributed file system over a file system in a centralized system ? 10
- (b) What are algorithms for deadlock prevention ?

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**Section-D**

8. (a) What are various layers of I/O software ? Explain function of each layer. 10
- (b) Explain Performance issues and Threads in detail. 10
9. (a) Explain Windows NT architecture. 10
- (b) Explain protection domain in UNIX. 10

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