Roll No. .....

24252

B. Tech 5th Sem. (CSE)

Examination – December, 2014

Principles of Operating System

Paper : CSE - 301 - F

Time : Three Hours] *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all, Selecting ***one*** question from each Section. Question No. **1** is ***compulsory.*** All questions carry equal marks.

1. Answer the following in brief : 2 x 10 = 20

(a) Differentiate between multitasking and multiprocessing operating systems.

(b) Differentiate between paging and segmentation.

(c) Differentiate between a process and a program.

(d) Why are page size always powers of 2 ? Explain.

(e) Is it possible to have a deadlock involving only one process ? Explain your answer.

(f) Differentiate between short-term and long term schedulers.

(g) Consider a system consisting of six drives, with 'n' processes competing for them. Each process may need two drives. For which values of 'n' is deadlock free.

(h) Differentiate between virtual memory and main memory.

(i) What is the cause of thrashing ? How does system detect thrashing ?

(j) Differentiate between user threads and kernel threads.

SECTION – A

2. Consider performance of FCFS algorithm for three compute-bound processes. What if have 3 processes P1 (takes 15 seconds), P2 (takes 4 seconds) and P3 (takes 6 seconds). If arrive in order P1, P2, P3, what is 20

(i) Waiting Time?

(ii) Turnaround Time?

(iii) Throughput?

What about if processes come in order P2, P1, P3 ? What is

(i) Waiting Time?

(ii) Turnaround Time?

(iii) Throughput?

3. (a) What is a process ? Describe its various states and explain various operations on processes. 10

(b) Compare batch and multiprogramming, network and distributed operating systems. 10

SECTION – B

4. (a) Describe various page replacement algorithms. 12

(b) Describe First fit, Best fit and Worst fit mechanism for memory allocation 08

5. (a) Explain the concept of virtual memory. 10

(b) Explain demand paging. 10

SECTION – C

6. What is a deadlock ? What are the necessary conditions for a deadlock ? Explain the mechanism for deadlock recovery. 20

7. Write notes on :

(a) Various directory structures. 10

(b) Disk scheduling. 10

SECTION - D

8. (a) What are the two differences between user level threads and kernel level threads? Under what circumstances is one type better than other ? 10

(b) Explain file system in Unix. 10

9. Write notes on :

(a) Windows NT . 12

(b) I/O interface. 8