



CS 301

III Semester Diploma (Computer) Examination, August 2011
OPERATING SYSTEMS

Time : 3 Hours

Max. Marks : 75

Instructions : 1) Answer **all** questions in Part A and either (a) or (b) of **each** question in Part – B.

2) **Each** question carries **1 (one)** mark in Part – A and **12 (twelve)** marks in Part – B.

PART – A

Answer **all** questions :

(15×1=15)

1. Define OS.
2. What is the purpose of system call ?
3. Define Process Control Block.
4. What is Inter Process Communication ?
5. Define Semaphores.
6. Is it possible to have a deadlock involving only one single process ?
7. Define critical section.
8. Define file sharing.
9. How many frames are needed for each page ?
10. Define resources sharing.
11. Expand the terms :
 - i) FCFS and
 - ii) FIFO.
12. What is the purpose of free space list ?
13. Give any three features of Linux.
14. State the difference between who and who am i Command.
15. What is a shell script ?

P.T.O.



PART – B

Answer **all** questions :**(5×12=60)**

16. A) 1) Explain the functions of Operating Systems.
 2) Explain the characteristics of the following operating systems.
 i) Batch Processing Systems and
 ii) Time Sharing Systems.

OR

- B) Consider the following set of processes, with the length of the processing time given in milliseconds.

Process	Processing Time	Priority
P1	8	2
P2	1	1
P3	1	4
P4	2	5
P5	6	3

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time 0.

- Draw four Gant charts illustrating the execution of these processes using FCFS, SJF, a non-priority (a smaller priority number implies at higher priority), and RR (quantum = 1) scheduling.
- What is the turnaround time of each process for each of the scheduling algorithms in part (a) ?
- What is the waiting time of each process for each of the scheduling algorithms in part (a) ?
- Which of the schedules in part (a) results in the minimal average waiting time (over all processes) ?



17. A) 1) What are race conditions ? How race conditions occur in operating system ?
2) Briefly explain the concept of Resource Allocation Graph.

OR

B) Briefly explain any two methods for recovering deadlock.

18. A) 1) How protection is achieved in paging ?
2) What is thrashing ? Explain any one of the method to prevent thrashing

OR

B) Explain page address translation by :

- i) Direct mapping and
- ii) Associative mapping.

19. A) 1) Explain different ways used to achieve I/O buffering.
2) List the ways of allocating storage, and give advantages of each.

OR

B) Briefly explain the following scheduling algorithms.

- i) FCFS
- ii) SCAN.

20. A) 1) Briefly explain the history of the Linux operating system.
2) Write down a shell script to find the largest of two numbers X and Y.

OR

B) Explain the following with respect to Linux system administration :

- i) Maintaining UserAccounts and
 - ii) Backups and restoration.
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