

Total No. of Questions : 12]

SEAT No. :

P3205

[Total No. of Pages : 3

OCT - NOV - 17

[5256]-303

S. Y. M. C. A. (Under Faculty of Engg.) (Semester - III)

OPERATING SYSTEMS

(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) Neat diagrams must be drawn wherever necessary.
- 2) Figures to the right side indicate full marks.
- 3) Use of Calculator is allowed.
- 4) Assume Suitable data if necessary.

- Q1) a) Define an assembler? How does an assembler works? Explain the working of an assembler with supportive block diagram. [4]
- b) What is loader? Explain the types of loader. [3]
- c) Write a note on Historical evolution of Operating System. [2]

OR

- Q2) a) Differentiate between assembler and compiler? [3]
- b) Explain the functions and characteristics of Operating System. [3]
- c) What is Linker? Explain the functions handled by Linker. [3]

- Q3) a) Consider the following set of processes. [6]

| Process | Burst Time | Priority |
|---------|------------|----------|
| P1      | 10         | 3        |
| P2      | 1          | 1        |
| P3      | 2          | 3        |
| P4      | 1          | 4        |
| P5      | 5          | 2        |

Assume arrival time of all processes is at time 0 in order P1, P2, P3, P4, P5. Calculate the turnaround time and waiting time for each process using FCFS and SJF.

- b) Enlist the services provided by Operating System? [2]

P.T.O.

OR

- Q4) a) Define:** [3]
- i) Process
  - ii) Threads
  - iii) Context Switching
- b) Differentiate between system call and library function. [3]
- c) What are the different scheduling criteria for evaluating performance of scheduling algorithm? [2]

- Q5) a) Explain any four IPC problems.** [4]
- b) Explain necessary conditions for deadlock to occur? [4]

OR

- Q6) a) How to detect deadlock? Explain recovery mechanism for deadlock.** [4]
- b) Explain software solution for Mutual exclusion. [2]
- c) Write a note on Monitors. [2]

- Q7) a) What is the concept of Virtual Memory? Explain concept of logical and physical addresses.** [3]
- b) Explain demand paging and steps in handling a page fault. [3]
- c) Write a note on Segmentation. [3]

OR

- Q8) a) Consider the following page reference string** [6]
- 1,2,3,4,2,1,5,6,1,2,3,7
- Numbers of page frames are three. Show the page trace and calculate the number of page faults for the following page reference schemes:
- i) LRU
  - ii) Optimal
- b) Explain the following with respect to memory management. [3]
- i) Compaction
  - ii) Fragmentation
  - iii) Swapping



**Q9) a) Explain any 4 file access methods. [4]**

**b) What are the different issues related to disk performance? Explain any one disk scheduling algorithm. [4]**

**OR**

**Q10) a) Explain the concept of file protection, What are the different access rights given to a file? [4]**

**b) Describe structure of Disk? [2]**

**c) Explain Acyclic-Graph directory structure. [2]**

**Q11) a) Explain the following components of Linux File system: [4]**

**i) Kernel**

**ii) System Libraries**

**iii) System Utilities**

**b) Comment on process scheduling in Linux. Which algorithms are used in Linux for scheduling? [4]**

**OR**

**Q12) a) Explain Linux file system. What are different file types? [4]**

**b) Explain following commands with example: [4]**

**i) grep**

**ii) find**

**iii) banner**

**iv) cal**

**RRR**