

2021

Computer Science

[M. Sc]

(CBCS)

(M.Sc. Third Semester End Examination-2021)

PAPER-301

(Advanced Operating system)

Full Marks: 50

Time: 02 Hrs

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers wherever necessary

Group A

1. Answer any FIVE questions of the following: 5x2=10

- a) What is socket?
- b) What is internal fragmentation?
- c) What is compaction?
- d) What is the purpose of relocation register?
- e) What do you mean address space of a memory?
- f) Give two characteristics of user level thread.
- g) Define system call and system programs.
- h) Why RAID is useful?

(2)

Group B

Answer any FOUR questions of the following: **5x4 = 20**

2. Explain PCB with a neat diagram. 5
3. Explain the demand paging in memory management scheme. 5
4. a) Explain with examples the difference between preemptive and non-preemptive priority scheduling.
b) Distinguish between 'starvation' and 'deadlock' 2+3
5. What are the essential conditions for a deadlock to occur? Explain with an example.
6. Consider the following disk block created at a time:
95, 143, 41, 53, 125, 16, 58, 138, 72
Assuming the disk head present initially at block number 62, draw the scheduling chart for FCFS and SSTF algorithm.
7. What is context switching? Explain the overhead incurred due to context switching on process and thread.

Group C

Answer any ONE questions of the following: **10x1 = 10**

8. Consider the following set of processes. CPU burst time and Arrival time is given below in milliseconds

(3)

Process	CPU burst time / Service time	Arrival time	Priority
P ₁	3	0	4
P ₂	6	2	5
P ₃	4	4	2
P ₄	5	6	1
P ₅	2	8	3

- a) Draw the following Gantt chart for
 - a. FCSF
 - b. SJF
 - c. SRTF
 - d. RR (When time quantum is 5 milliseconds)
 - e. Priority scheduling
 - b) Also calculate the average turnaround time, average relative delay, and average response time for the above algorithm.
9. Explain page reference string. Consider the page reference string: 1, 2, 3, 3, 3, 4, 2, 2, 1, 5, 6, 2, 1
How many page faults would occur for the following algorithms, assuming 2 frames?
 - i) LRU
 - ii) FIFO
 - iii) Optimal Replacement

[Internal Assessment – 10]