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III Semester B.C.A. 4 Degree Examination, March/April - 2023

OPERATING SYSTEM PRINCIPLES

(Repeater)

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates :

- 1) Answer All three sections.
- 2) Draw the neat diagrams wherever necessary.

SECTION - A

Answer All Ten questions.

(10×2=20)

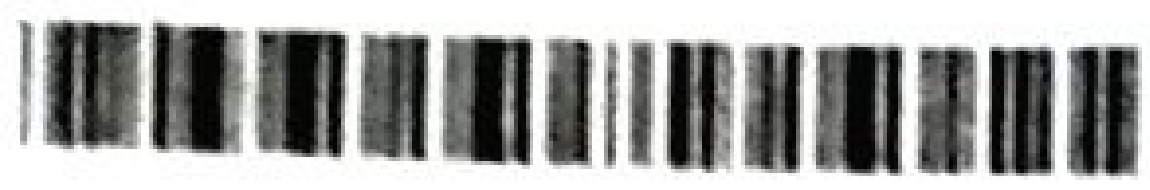
- I.
1. a) What is operating system?
 - b) Define real time operating system.
 - c) List any four functions of operating system.
 - d) Define microkernel operating system.
 - e) What is thread? Name the types.
 - f) Name two deadlock characteristics.
 - g) Differentiate internal and External fragmentation.
 - h) What is thrashing?
 - i) Mention different file types.
 - j) What is paging?

SECTION - B

II. Answer any Four questions.

(4×5=20)

2. Explain the concept of time sharing technique.
3. Explain the states of a process with process control block.
4. Explain Dead lock avoidance.
5. Draw a neat diagram of concept of paging.
6. Explain file system structure.



SECTION - C

III. Answer any **Four** questions.

(4×10=40)

7. a) Explain concept of virtual machine.
b) Explain monolithic operating system structure. (5+5)

8. a) Define peterson solution.
b) Consider the following set of processes with CPU burst time and arrival time given in milliseconds. (2+4+2+2)

Process	Arrival time	Burst time
P1	0	8 ms
P2	1	4 ms
P3	2	9 ms
P4	3	5 ms

* Draw Gantt charts illustrating the execution of these processes with

- 1) FCFS
- 2) Preemptive SJF.

* Calculate average waiting time

* Calculate average turn around time.

9. a) Explain critical section problem.
b) Explain dining philosophers problem of synchronization. (5+5)

10. a) Describe logical and Physical address map.
b) Explain page replacement algorithms. (5+5)

11. a) Explain disk scheduling algorithm file management.
b) Explain free space management. (5+5)