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III Semester B.C.A. Degree Examination, April-2022

COMPUTER SCIENCE

Operating System

Paper : BCA305T

(CBCS Scheme)

Time : 3 Hours

Maximum Marks : 100

*Instructions to candidates :*

Answer all the questions.

## SECTION - A

I. Answer any **Ten** questions.

(10×2=20)

- 1) Define operating system. Give two examples.
- 2) Mention the difference between a program & procen.
- 3) What is a thread?
- 4) How do you define deadlock?
- 5) Define aging.
- 6) What is critical region?
- 7) Mention the difference between fixed size partition & dynamic partition.
- 8) What do you mean by viren & warm?
- 9) Define page fault & fragmentation.
- 10) Mention the advantages of distributed operating system.
- 11) What is fragmentation?
- 12) Define semaphore.

## SECTION - B

II. Answer any **Five** questions.

(5×5=25)

- 13) Explain services provided by operating system.
- 14) With a neat diagram, explain procen states.
- 15) What is critical section problem? Explain.
- 16) Describe resource allocation graph with necessary diagram.

[P.T.O.]



- 17) Short notes on Paging.
- 18) What are the different types of file access methods? Explain in detail.
- 19) Write a short note on virtual machine.
- 20) Explain the goals of protection.

### SECTION - C

III. Answer any **Three** questions. (3×15=45)

- 21) List the types of OS explain any three of them by listing advantages & disadvantages. (15)
- 22) How do you define synchronization? List
  - a) Critical synchronization problems. Explain dining philosophers problem. (9)
  - b) Discuss deadlock prevention and avoidance. (6)
- 23) Write short notes on
  - a) External fragmentation (8)
  - b) Segmentation (7)
- 24) a) Consider the following set of processes with CPU burst time in ms.

Process	CPU burst time
P1	5
P2	10
P3	6
P4	2

- Draw the Gantt chart illustrating the execution of these processes using SJF algorithm. Find average waiting time & turn around time. (6)
- b) Explain the structure of hard disk (5)
  - c) Explain system program. (4)
  - 25) a) Differentiate between pre-emptive & non-pre-emptive scheduling. (5)
  - b) Explain the directory structure. (5)
  - c) Explain the types of System Calls. (5)



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## SECTION - D

IV. Answer any **One** question.

(1×10=10)

- 26) a) Consider the reference string  
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7  
Find the page fault rate using FIFO page replacement algorithm. (6)
- b) Discuss structure of a hard disk with a neat diagram (4)
- 27) a) Consider the disk queue with the requests find average head movement  
98 183 37 122 14 124 65 67 (6)
- b) Explain Least-Recently used (LRU) (4)

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