CS – 495

III Semester B.C.A. Degree Examination, March 2023
33
(CBCS) (Y2K14)
(Repeaters)
COMPUTER SCIENCE
BCA 305 : Operating Systems

Time : 3 Hours

Max. Marks : 100

Instruction : *Answer all the Sections.*

SECTION – A

I. Answer **any ten** questions. (10×2=20)

1) What are the main objectives of OS ?

2) What is spooling ?

3) What is Process Control Block ?

4) What is thread ?

5) What is race condition ?

6) Define Deadlock.

7) What are base and limit registers ?

8) What is Belady's anomaly ?

9) List the file attributes.

10) Define tracks and sectors.

11) What is security ?

12) List the types of viruses.

SECTION – B

II. Answer **any five** questions. (5×5=25)

13) Explain time sharing and distributed OS.

14) Explain the states of a process.

15) What is semaphore ? Explain the types.

16) Explain the methods for handling deadlock.

17) Explain overlays with merits and demerits.

18) Explain the features of virtual memory.

19) Explain the operations on directory.

20) Explain the forms of security violation.

SECTION – C

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

21) a) Explain the components of OS. 10

   b) Write a note on Threads. 5

22) a) Write an algorithm for producer-consumer problem and explain solving the problem using semaphores. 10

   b) Consider the following set of process with a Time-slice 5ms.

Process	Burst time
P_1	25
P_2	3
P_3	3

Draw the Gantt chart illustrating the execution of process using Round-Robin scheduling. Find average waiting time and average turn around time. 5

23) a) Explain Banker's algorithm with safety algorithm and resource request algorithm. **10**

b) Write a short note on swapping. **5**

24) a) Define thrashing. Explain the causes of thrashing. **8**

b) Explain the file attributes. **7**

25) a) Explain contiguous allocation and linked allocation methods for files with merits and demerits. **10**

b) With a neat diagram. Explain swap-space management. **5**

SECTION – D

IV. Answer **any one** question. **(1×10=10)**

26) a) What are system calls ? Explain the types of system calls. **6**

b) Explain necessary conditions for deadlock situation. **4**

27) a) Consider the reference string 5, 4, 3, 2, 1, 4, 3, 5, 4, 3, 2, 1, 5. Find page fault rate using LRU page replacement algorithm consider frame size of 4. **5**

b) Explain single level and two-level directory structure. **5**