[6034]-403
S.Y. B.B.A. (CA)
CA - 403 : OPERATING SYSTEM
(2019 Pattern) (Semester - IV)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :
1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q1) Attempt any Eight of the following : [8 × 2 = 16]

a) Define 'Least Recently Used' in memory management.

b) Define Context Switch?

c) What is a page frame?

d) List various properties of the file.

e) What is 'seek time' in Disk scheduling?

f) What is compaction?

g) Define Belady's Anomaly

h) List any four characteristics of operating system

i) Define a safe state.

j) What is starvation?

Q2) Attempt any Four of the following : [4 × 4 = 16]

a) Explain Operating System Structure.

b) What is scheduling? Compare short term scheduler with long term scheduler.

c) Draw and explain Round Robin Scheduling with the help of an example.

d) What are Semaphores? Explain the types of Semaphores.

e) Draw and explain the Contiguous Memory Allocation.

P.T.O.

Q3) **Attempt any Four of the following :** [4 × 4 = 16]

a) State and explain Critical Section Problem.

b) Consider the following set of processes with the length of the CPU burst time given in milliseconds –

Process	Burst Time	Arrival Time
P1	3	3
P2	3	6
P3	4	0
P4	5	2

   i) Draw Gantt chart using non preemptive Shortest Job First method.

   ii) Calculate average Turnaround time & average Waiting time.

c) What is a deadlock? How can deadlock be avoided?

d) Explain File System Access Methods.

e) Explain Paging in case of memory management.

Q4) **Attempt any Four of the following :** [4 × 4 = 16]

a) Assume there are a total 200 tracks present on the disk. if the request queue is: 82, 170, 43, 140, 24, 16, 190 and the initial position of the head is 50. Apply Shortest Seek Time First (SSTF) disk scheduling algorithm and calculate total head movement.

b) Explain Job Control Block with the help of a diagram.

c) What are the characteristics and necessary conditions for a deadlock?

d) Consider the page reference string. 4, 7, 6, 1, 7, 6, 1, 2, 7, 2.

The number of frames in the memory is 3. Initially all frames are empty. Find out the number of page faults respective to :

   i) Optimal Page Replacement Algorithm

   ii) FIFO Page Replacement Algorithm

   iii) LRU Page Replacement Algorithm

e) Explain memory management through Fragmentation with the help of a diagram.

Q5) Write a short note on Two of the following : [2 × 3 = 6]

a) Shortest Seek Time First.

b) Linked Allocation for File System.

c) Address binding in case of memory management.

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