

Total No. of Questions : 5]

SEAT No. :

**PD1444**

[Total No. of Pages : 2

[6441]-603

**S.Y.B.B.A. (Computer Application)**  
**CA-403 : Operating System**  
**(2019 CBCS Pattern) (Semester - IV)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *All questions are compulsory.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*

**Q1) Attempt any Eight of the following. (Out of Ten)**

**[8×2=16]**

- a) Define paging in memory management.
- b) Define Context Switch.
- c) What is a page frame?
- d) List various properties of the file.
- e) What is 'Waiting time' in Process scheduling?
- f) What is compaction?
- g) Define Deadlock.
- h) List any four characteristics of the operating system.
- i) Define Belady's Anomaly.
- j) What is starvation?

**Q2) Answer any Four of the following. (Out of Five)**

**[4×4=16]**

- a) Explain Operating System Structure.
- b) What is scheduling? What is the long-term scheduler?
- c) 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) Answer any Four of the following. (Out of Five)**

**[4×4=16]**

- State and explain the Critical Section Problem.
- 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

- Draw a Gantt chart using the non-preemptive Shortest Job First method.
  - Calculate the average Turnaround time & average waiting time.
- What is a deadlock? How can deadlock be avoided?
  - Explain File System Access Methods.
  - Explain Operating System Structure.

**Q4) Attempt any Four of the following. (Out of Five)**

**[4×4=16]**

- Assume there are a total of 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 the First Come First Serve (FCFS) disk scheduling algorithm and calculate total head movement.
- Explain memory management through Fragmentation with the help of a diagram.
- What are the characteristics and necessary conditions for a deadlock?
- 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:  
FIFO Page Replacement Algorithm
- Explain the Process Control Block with the help of a diagram.

**Q5) Write a short note on any Two of the following. (Out of Three).**

**[3×2=6]**

- Shortest Seek Time First.
- Linked Allocation for File System.
- Address binding in case of memory management.

\* \* \*