

Total No. of Questions : 5]

SEAT No. :

PA-1975

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[5954]-403

S.Y. B.B.A. (Computer Application)

CA - 403 : OPERATING SYSTEM

(2019 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.

Q1) Attempt any Eight of the following.

[2×8=16]

- a) Define the term operating system.
- b) Define system program.
- c) Which scheduler controls the degree of multiprogramming?
- d) What is Turn-Around Time?
- e) What is meant by Deadlock?
- f) What is demand paging?
- g) List any four attributes of files.
- h) What do you mean by seek Time in Disk Scheduling.
- i) What does FIFO and MFU stand for?
- j) Define Rollback?

Q2) Attempt any four of the following.

[4×4=16]

- a) List and explain services provided by the operating system.
- b) Explain Process Control Block (PCB) with diagram.
- c) Explain 'Dining Philosopher' Synchronization problem.
- d) What is Fragmentation? Explain types of its in detail.
- e) Describe I/O Hardware with its type of I/O devices.

Q3) Attempt any four of the following.

[4×4=16]

- a) Explain various types of system programs.
- b) Explain Indexed Allocation in detail.

P.T.O.

- c) The request queue is as follows:
 15, 27, 137, 18, 150, 65, 194.
 Number of tracks = 0 to 199
 Starting position or current head position = 128. Find total head movement by applying SSTF (Shortest Seek Time First) disk scheduling algorithm.
- d) List any two types of Multiprocessor.
- e) Consider the following set of processes with length of CPU Burst time and arrival time in milliseconds.

| Process | Arrival | Time Burst Time |
|----------------|---------|-----------------|
| P ₁ | 0 | 3 |
| P ₂ | 2 | 6 |
| P ₃ | 4 | 4 |
| P ₄ | 6 | 5 |
| P ₅ | 8 | 2 |

Calculate turn around time, waiting time, average waiting time and average turn around time using preemptive SJF scheduling algorithm.

Q4) Attempt any Four of the following.

[4×4=16]

- a) Consider the following snapshot of the system.

| Process | Allocation | | | | Max | | | | Avaliable | | | |
|----------------|------------|---|---|---|-----|---|---|---|-----------|---|---|---|
| | A | B | C | D | A | B | C | D | A | B | C | D |
| P ₀ | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 1 | 5 | 2 | 0 |
| P ₁ | 1 | 0 | 0 | 0 | 1 | 7 | 5 | 0 | | | | |
| P ₂ | 1 | 3 | 5 | 4 | 2 | 3 | 5 | 6 | | | | |
| P ₃ | 0 | 6 | 3 | 2 | 0 | 6 | 5 | 2 | | | | |
| P ₄ | 0 | 0 | 1 | 4 | 0 | 6 | 5 | 6 | | | | |

Is the system safe? Justify?

If yes give safe sequence

- b) Explain different methods for recovery from deadlock?

- c) Consider a reference string 4, 7, 6, 1, 7, 6, 1, 2, 7, 2 the number of frames in the memory is 3. Find out number of page Faults respective to
- i) FIFO
 - ii) LRU
- d) Explain advantages and disadvantages of linked allocation methods.
- e) Define the term:
- i) Logical Address
 - ii) Physical Address

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

- a) What is Interrupts.
- b) What is medium term scheduler.
- c) Explain semaphores and its types in detail.

