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SEAT No. :

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T.Y. B.Sc.

COMPUTER SCIENCE

CS - 351 : Operating Systems - I

(Revised 2019) (Semester - V) (New CBCS) (Paper - I)

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates :

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.
- 3) Assume suitable data, if necessary.

Q1) Attempt any Eight of the following.

[8 × 1 = 8]

- a) What is batch operating system?
- b) List any two advantages of multithreaded programming.
- c) Define dispatch latency.
- d) "Counting Semaphore can be implemented by using binary semaphore". True/False. Justify.
- e) Define logical address space.
- f) Define spooling.
- g) What is ready queue?
- h) What will happen if all processes are I/O bound in system?
- i) Define semaphore.
- j) List various dynamic allocation memory management methods.

Q2) Attempt any four of the following.

[4 × 2 = 8]

- a) What is page table? What are its contents?
- b) What is critical section problem?
- c) What is pre - emptive and Non - preemptive scheduling?
- d) Explain the functions performed by dispatcher.
- e) Write the advantages of microkernel.

P.T.O.

Q3) Attempt any two of the following.

[2 × 4 = 8]

- a) Explain process control block with proper diagram.
- b) Consider the following snapshot of a system.

Process	Arrival Time	CPU burst Time
p ₁	0	7
p ₂	1	2
p ₃	2	5
p ₄	3	4

Compute average turnaround time and average waiting time using RR with quantum 3.

- c) Differentiate between internal fragmentation and external fragmentation.

Q4) Attempt any Two of the following.

[2 × 4 = 8]

- a) Explain one - to - one and many - to - many multithreading models.
- b) Explain dining philosopher problem.
- c) Consider the page reference string 2,3,2,1,5,2,4,5,3,2,5,2. How many page faults occur for the following page replacement algorithms, assuming 3 frames?
 - i) FIFO
 - ii) LRU

Q5) Attempt any One of the following.

[1 × 3 = 3]

- a) What is system call? Explain the system call for process and job control.
- b) Explain swapping in detail.

