

[6328]-51**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.

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.

