Total No. of Questions : 5]

PC-1579

SEAT No. : 11916

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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.

[2 × 4 = 8]

Q3) Attempt any two of the following.

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 trunaround 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.

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