Total No. of Questions : 4]

SEAT No. :

P5149

[Total No. of Pages : 2

[5823]-501

T.Y. B.Sc.

COMPUTER SCIENCE

CS - 351 : Operating Systems - I

(2019 Pattern) (CBCS) (New) (Semester - V) (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) Define bootstrapping.

b) Explain posix pthread.

c) What is role of dispatcher?

d) List the solutions to critical section problem.

e) What do you mean by page hit?

f) What is kernel?

g) What is ready queue?

h) What do you mean by I/O bound process?

i) What are the two types of semaphores?

j) What is virtual memory?

Q2) Attempt any Four of the following. **[4 × 2 = 8]**

a) What is system call? Explain system call related to device manipulation.

b) Write short note on multilevel queue scheduling.

c) Explain producer, consumer problem.

d) Explain paging in brief.

e) Write difference between preemptive and non preemptive scheduling?.

P.T.O.

Q3) Attempt any Two of the following. **[2 × 4 = 8]**

a) What is thread? Explain any 2 multithreading models in brief with diagram.

b) Write short note on logical address and physical address binding with diagram.

c) Consider following set of processes with the length of CPU burst time and arrival time given in milliseconds. Calculate waiting time, turnaround time per each process. Also calculate the average waiting time and average turn around time using preemptive priority scheduling.

Process	Burst time	Arrival time	Priority
P_1	14	4	3
P_2	5	2	1
P_3	6	9	2
P_4	5	5	3
P_5	9	0	4

Q4) Attempt any Two of the following. **[2 × 4 = 8]**

a) Define process. Explain process state diagram in brief.

b) Explain reader-writer problem in brief.

c) Consider a reference string 3,2,1,0,3,2,4,3,2,1,0,4 No. of frames = 3. Find out the number of page faults using i) LRU ii) OPT.

Q5) Attempt any One of the following. **[1 × 3 = 3]**

a) Explain layered operating system in brief with diagram.

b) Explain first fit, best fit, worst fit, next fit algorithm.