Total No. of Questions : 5]

SEAT No. :

PE-1511

[Total No. of Pages : 2

[6502]-501
T.Y. B.Sc.
COMPUTER SCIENCE
CS-351 : Operating systems - I
(Rev. 2019) (Semester - V) (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 the purpose of fork ( ) system call?

b) What do you mean by trap?

c) State the role of medium term scheduler.

d) Define process.

e) "Priority scheduling suffers from starvation." Comment True/False and justify.

f) What do you mean by thread?

g) Define race condition.

h) List types of semaphore.

i) List various dynamic allocation memory management methods.

j) Find the physical address for logical address 2,280 having segment length 285 with base address 3000.

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

a) Write the system calls under the category of process management.

b) List the benefits of thread.

c) List and explain different CPU scheduling criteria.

d) What is critical section problem?

e) What is page table? What are its contents?

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

a) Write a note on multi-level feedback queue scheduling algorithm.

b) Consider the following snapshot of a system.

Process	Arrival Time	CPU Burst Time
P1	0	8
P2	1	4
P3	2	9
P4	3	5

Illustrate the execution of these processes using pre-emptive SJF CPU scheduling algorithm. Calculate average waiting time & average turn around time. Also draw the Gantt chart.

c) Compare MFT and MVT of memory partition.

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

a) What is semaphore? Explain dining philosopher's problem in detail.

b) Explain one-to-one and many-to-many multithreading models.

c) Consider the following page reference string:

1, 2, 3,4, 2, 1,5,6,2,1,3

How many page faults would occur for the following page replacement algorithms assuming three frames?

i) FIFO

ii) LRU

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

a) Explain different types of services provided by an operating system.

b) Define dispatcher. List functions performed by dispatcher.

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