[6155]-51

T.Y. B.Sc. (Computer Science)
CS-351 : OPERATING SYSTEMS-I
(Revised 2019 Pattern) (Semester-V)

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 I/O bound process.

b) What is the purpose of fork ( ) system call?

c) What is Bootstrap Loader?

d) Define context switch.

e) "Priority scheduling suffers from starvation", True/False Justify.

f) What is Mutual Exclusion.

g) What is race condition?

h) Define Limit register?

i) What is Frame?

j) List the advantages of open-source operating system?

Q2) Attempt any FOUR of the following.

[4×2=8]

a) What is critical section problem?

b) What is the role of dispatcher?

c) Write the benefits of virtual memory?

d) Explain any two advantages of multithreding?

e) Write the system calls under the category of process management?

P.T.O.

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

a) What is process? Explain in different types of process states?

b) What is fragmentation? Explain the types of Fragmentation.

c) Consider the following set of processes with the length of CPU burst time and arrival time given in milliseconds.

Process	Burst time	Arrival time
P_1	4	2
P_2	6	0
P_3	2	1

Illustrate the execution of these processes using Round Robin (RR) CPU scheduling algorithm consider the time quantum is 3. calculate average waiting time and average turn-around time. Also draw the Gantt chart.

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

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

b) Which are the different types of schedulers? Explain the working of short-term scheduler?

c) Consider the following page replacement

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) Write a short note on MMU.

e) Explain Layered structure of the operating system.

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