Total number of printed pages–4

53 (CS 303) OPSY

2021

OPERATING SYSTEM

Paper : CS 303

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*(**All** questions are **mandatory**)*

1. Briefly answer the following questions : 2×10=20

   (i) What is time sharing system ?

   (ii) Write *two* advantages of distributed operating system.

   (iii) What is dispatcher ?

   (iv) What do you mean by aging ?

Contd.

(v) What is the basic function of paging?

(vi) What is virtual memory?

(vii) What is demand paging?

(viii) Define Semaphore.

(ix) What is sequential access method for accessing a file?

(x) Write the function of the Linux commands: ps, grep

2. Answer the following questions: 5×4=20

(a) What is race condition? What are the four conditions needed to hold for avoiding race condition?

(b) What is a process? Explain the various states of a process with state-transition diagram.

(c) What is system call? Give some examples.

(d) Mention *five* functions of operating system.

3. *(a)* Consider the following processes arrived for execution at the time indicated :

Process	Arrival time	Burst time (*ms*)
P1	0	10
P2	1	2
P3	2	3
P4	3	1
P5	4	5

Draw the Gantt chart and calculate the average turnaround time for each process using SJF (Preemptive) and Round Robin Scheduling algorithm. 10

(b) Consider the page reference string

1, 3, 0, 3, 5, 6, 5, 1, 6, 0, 5

How many page faults would occur for replacement by LRU, FIFO and Optimal algorithms for three frames ? All frames are initially empty and first unique page reference causes a page fault. 10

4. *(a)* Define a file. Discuss *any three* operations that can be performed on a file. 5

(b) What do you mean by spooling ? How is it different from buffering ? 5

(c) What data structures are used to implement Banker's algorithm ? Briefly mention their purposes. 5

(d) Write the differences between pre-emptive and non-preemptive scheduling. 5

5. Write short notes on the following : 5×4=20
(any four)

(i) Process Control Block

(ii) Kernel level thread

(iii) Deadlock in OS

(iv) Resident Monitor

(v) Real time OS

(vi) Process *vs* Thread.