H Roll No. .....

TBC–204/TBI–204

B. C. A./B. SC. (IT)
(SECOND SEMESTER)
MID SEMESTER
EXAMINATION, April, 2023

OPERATING SYSTEM

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any ***one*** of the sub-questions.

(ii) Each sub-question carries 10 marks.

1. (a) What is an Operating System ? Explain in detail the different services provided by the Operating System. 10 (CO1, CO2)

OR

(b) Consider the following scenario of processes in a system : 10 (CO1, CO2)

P. T. O.

Process	Arrival Time	Burst Time
P1	6	6
P2	2	2
P3	8	8
P4	3	3
P5	4	4

Draw a Gantt chart for the execution of the processes, showing their start time and end time using FCFS algorithm. Calculate turnaround time, and waiting time for each process, and average turnaround time, and average waiting time for the system.

2. (a) What is the main advantage of the layered approach to system design ? What are the disadvantages of the layered approach ? 10 (CO1, CO2)

OR

(b) Consider the following scenario of processes in a system with processes P1, P2, P3, P4 with arrival and execution time as follows :

(0, 8), (2, 5), (3, 12), (3, 10).

Draw a Gantt chart for the execution of the processes, showing their start time and end time using Preemptive SJF algorithm.

Calculate turnaround time, normalized turnaround time, and waiting time for each process, and average turnaround time, average normalized turnaround and average waiting time for the system. 10 (CO1, CO2)

3. (a) Define the essential properties of the following types of Operating System : 10 (CO1, CO2)
   (i) Parallel
   (ii) Multiprogramming
   (iii) Time Sharing

OR

(b) Describe the actions taken by kernel to context-switch between processes. 10 (CO1, CO2)

4. (a) Write short notes on the following : 10 (CO1, CO2)
   (i) Batch Operating system
   (ii) System calls
   (iii) Real time system
   (iv) Network Operating system
   (v) System Boot

OR

(b) What do you mean by a process ? Explain the different states a process can be with a neat diagram. 10 (CO1, CO2)

5. (a) Why is it important for the scheduler to distinguish I/O bound programs from CPU bound programs ? Briefly explain the various scheduling criteria for CPU scheduling. 10 (CO2)

OR

(b) Explain Round Robin Scheduling algorithm in detail. 10 (CO2)