Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐☐   Total No. of Pages : 02

Total No. of Questions : 09

M.Sc.(Computer Science)   (Sem.–1)
OPERATING SYSTEMS
Subject Code : MSC-104
M.Code : 70890
Date of Examination : 25-01-23

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :
1. **SECTIONS-A, B, C & D contains TWO questions each carrying TEN marks each and students have to attempt any ONE question from each SECTION.**
2. **SECTION-E is COMPULSORY consisting of TEN questions carrying TWENTY marks in all.**

SECTION-A

1) What is an operating system? Discuss in detail how an operating system can be classified into different categories?

2) What is a Process? Explain different states of a process with diagram. Also explain in detail the contents of PCB of process.

SECTION-B

3) Find Waiting Time and Turnaround Time for given Process using FCFS and SJF algorithms.

Process	Arrival Time (ms)	Burst Time (ms)
P1	1	5
P2	2	4
P3	2	7
P4	3	2

4) Explain Inter process communication and synchronization.

SECTION-C

5) A computer uses an 18 bit address system, with 6 bits used as a page address and 12 bits used as a displacement. Calculate the total number of pages and express the following address as a paging address:- 001111000000111000.

6) Explain different Page Replacement Algorithms used in Demand Paging.

SECTION-D

7)   Give some means by which the managers of the system connected to Internet could have designed their systems to limit or eliminate the damage done by the worms.

8)   Write short notes on:

a) Access control and authentication

b) File protection.

SECTION- E

9)   Answer Briefly :

a) Name any two system calls.

b) How compaction solves the problem of external fragmentation?

c) Differentiate between segmentation and paging.

d) Define tree based file management technique.

e) What is meant by saying that program in reentrant?

f) A round robin system uses swapping to free process memory space. What should be the relative sizes of the time-slot and swap time to ensure efficient processor utilization?

g) Write the syntax of LRU algorithm.

h) Define random access file structure.

i) Write steps of disk formatting.

j) How security is maintained at application layer?

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.