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

Total No. of Questions : 09

B.Tech.(CSE)/(IT)(Sem.–4)
OPERATING SYSTEMS
Subject Code : BTCS-401
M.Code : 56604
Date of Examination : 02-07-22

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTION TO CANDIDATES :
1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. **Write briefly :**

    a. What are PCBs? What do they store?

    b. Name the operating system components.

    c. What is the difference between a page table and a page frame?

    d. What is time-sharing?

    e. What is a Context switch?

    f. What is a file system?

    g. What is kernel?

    h. How the logical memory is mapped to physical?

    i. How an actual address converted to virtual address?

    j. What is Process state? Describe various process states in a diagram.

SECTION-B

2. A Computer System has 36-bit Virtual Address Space with a Page Size of 8 K and each page table entry of 4 Bytes. What will be the number of pages in Virtual Address Space? What is the maximum size of addressable Physical Memory?

3. Compare demand paging *Vs* segmentation.

4. What is a process? How is a process different from a program? Explain the need of multiprogramming.

5. Explain the following:

    a) Hardware security

    b) Access control

    c) Passwords.

6. Discuss Multiprocessor operating system organization in detail.

SECTION-C

7. Suppose that the following processes arrive for execution at the time indicated:

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

    What is the average waiting and turn-around time for these processes with :

    a) FCFS scheduling algorithm

    b) SJF algorithm

    c) Pre-emptive SJF algorithms.

    d) Non-Preemptive SJF algorithms.

8. Explain the following :

    a) Internal and External fragmentation.

    b) Mapping between logical and physical address space.

    c) Difference between paging and segmentation.

9. Consider the following page reference string :

    7,0,1,2,0, 3, 0,4,2, 3,0, 3,2,1,2,0,1,7,0,1

    How many page faults will occur for the FIFO page replacement algorithms, assuming three frames? Does the page fault rate always decrease with increasing number of frames?

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.