Reg. No. | | | | | | | | | | | [21CIC35]

THIRD SEMESTER B.Tech EXAMINATION, DECEMBER– 2022

OPERATING SYSTEMS

Time:3 Hours **Maximum Marks:50**

Instructions:
i. PART - A (Question 1-5) Answer any 4 questions.
ii. PART - B (Question 6-8) Answer any 2 questions.
iii. PART - C (Question 9) is Compulsory

PART – A **05X4=20**

1. What is a virtual machine? With a neat diagram discuss the implementation of virtual machine along with its benefits. **05**

2. What is PCB? Discuss the contents of PCB with a neat diagram. **05**

3. With a neat diagram, explain how TLB improves the performance of paging system. **05**

4. What are the different file types? Give their functions with an example for each. **05**

5. Consider the following snap shot of a system **05**

Process	Allocation A B C	Request A B C
P0	0 1 0	0 0 0
P1	2 0 0	2 0 2
P2	3 0 3	0 0 0
P3	2 1 1	1 0 0
P4	0 0 2	0 0 2

Total resources (A, B, C) = (7, 2, 6)

Answer the following question using deadlock detection algorithm

i. Is the system in a safe state? If Yes mention the safe sequence.

PART - B **09X02=18**

6. Define Operating system? List and explain the various components of an Operating System in detail. **09**

7. For the following set of the process write Gantt chart and find the average waiting time and average turn around time using (a)FCFS (b) SJF(c)pre-emptive priority (d) Round - Robin (TQ =2ms) scheduling algorithms. **09**

Process	Arrival Time	Burst time	Priority
P1	0	9	3
P2	2	8	1
P3	4	2	4
P4	5	4	2
P5	4	5	3

8. a. Explain the following disk scheduling algorithms with example: **04**
   i. FCFS (First Come First Serve)
   ii. SSTF (Shortest Seek Time First)

   b. Discuss the different methods for handling deadlocks. **05**

PART - C **01X12=12**

9. a. Consider the following page reference stream 0,1,2,3,0,1,2,3, 0,1,2,3,4,5,6,7 **06**
How many page faults would occur for FIFO, LRU and Optimal page replacement algorithms, assuming 3 frames? Calculate Page hit ratio and mis ratio.

   b. Explain the various modules of Linux kernel. **06**