

# Pre-board Examination - 2024

**Subject: IT 241: Operating System FM: 60**

**Semester: BIM 4th Semester Time: 3 hrs**

**Group A**  [10X1=10]

1. What are the objectives of OS?
2. Explain types of threads in OS.
3. Explain the use of DMA in I/O management.
4. What is remote procedure call?
5. Explain the Resource allocation graph.
6. Explain real time operating system.
7. What is coalescing and compaction?
8. Explain link list memory management.
9. Explain virtual machine.
10. Explain access control matrix in file management.

**Group B Short Answer Question.**

Attempt any five questions. [5x3=15]

1. Explain producer consumer problem.
2. What is fragmentation? Explain its type with an example.
3. What is process control block? Explain system call with example.
4. Explain kernel and its types.
5. Explain the terms authentication and authorization. Explain different types of malicious software.
6. Explain advantage of distributed system over centralized system.

**Group C Long Answer Questions.**

Attempt any three questions. [3x5=15]

1. Explain the condition for resource deadlock occurance. How can you handle those conditions to prevent the system form deadlock?
2. What is file? Explain the state process model.
3. What is mutual exclusion? Explain different types of mutual exclusion.
4. Given the following page references as

0,9,0,1,8,1,8,7,1,2,8,2,7,8,2,3,8,3.

Calculate page fault ratio for LRU, FIFO page replacement algorithm.

**Group D**

Attempt all. [2x10=20]

1. Write down CPU scheduling criteria. For the following process draw a gantt chart and table to calculate average waiting time and average turnaround time.
   1. FIFO
   2. SRTF
   3. Priority
   4. Round robin for quantum time =2

|  |  |  |  |
| --- | --- | --- | --- |
| Process | Arrival time | Burst time | Priority |
| A | 0 | 7 | 3 |
| B | 2 | 7 | 1 |
| C | 3 | 2 | 4 |
| D | 3 | 2 | 2 |

1. Define term Seek time. Suppose that a disk has 100 cylinder number 0 to 99. Currently head at 43. The queue of pending request given as 86,70,13,74,48,9,22,50,30. Calculate total seeking time for given algorithm as:
   1. FCFS
   2. SSTF
   3. SCAN
   4. LOOK