**Asian School of Management and Technology**

(Affiliated to Tribhuvan University)

Gongabu, Kathmandu

**Full Marks: 60**

**Time: 3 Hrs.**

**SET A**

**Preboard Examination 2081**

**BIM / Fourth Semester / IT 241: Operating System**

***Candidates are required to answer the question in their own words as far as practicable.***

**Group “A”**

**Brief Answer Question**

**Attempt All Questions [10\*1=10]**

1. What are two types of resources?
2. What is the difference between the user mode and the kernel mode of the operating system?
3. Explain virus and worm.
4. What is the convoy effect in the FCFS algorithm?
5. What is Turned Around Time (TAT) in scheduling? How do you calculate TAT?
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 [5\*3=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 different types of system calls with suitable examples.
5. Explain the operating system structure and its types.
6. Discuss the advantages and disadvantages of the first come first serve (FCFS) algorithm.

**Group “C”**

**Long Answer Questions**

**Attempt Any Three Questions [3\*5=15]**

1. What is critical section problem? How do you solve producer consumer problem using semaphore?
2. What are the conditions of occurring Deadlock? Explain
3. 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.

1. Explain ostrich algorithm.

**Group “D”**

**Comprehensive Question**

**Attempt All Questions [2\*10=20]**

1. Consider the following table of arrival time and burst time for four processes P1, P2, P3, and P4. Solve it using the FCFS, SJF(n), Round-Robin(3), Priority Scheduling

|  |  |  |  |
| --- | --- | --- | --- |
| Processes | Arrival Time | Burst Time | Priority |
| P1 | 0 | 5 | 0 |
| P2 | 1 | 3 | 2 |
| P3 | 2 | 4 | 1 |
| P4 | 4 | 1 | 3 |

Create a Gantt chart and calculate:

1. Completion time
2. Turn Around Time
3. Waiting time
4. Average waiting time
5. Explain disk scheduling. Consider a disk with 200 tracks and the queue has random requests from different processes in the order: 55, 58, 39, 18, 90, 160, 150, 38, 184 Initially arm is at 100. Find the Average Seek length using FIFO, SCAN and SSTF algorithm.

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