**Asian School of Management and Technology**

(Affiliated to Tribhuvan University)

Gongabu, Kathmandu

**Full Marks: 60**

**Time: 3 Hrs.**

**SET B**

**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. Explaim time shearing and multiprocessing system.
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 Multiprocessing operating system.
7. Explain authorization and authintication.
8. Write two functions of OS.
9. Explain microkernel.
10. Explain two state process model.

**Group “B”**

**Short Answer Question**

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

1. Explain kernel and its types.
2. Explain the terms authentication and authorization. Explain different types of malicious software.
3. Explain advantage of distributed system over centralized system.
4. Explain distributed system with characteristics.
5. Explain client-server model.
6. Explain process communication in the operating system.

**Group “C”**

**Long Answer Questions**

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

1. What is operating system? Explain its functions with examples.
2. Explain sleeping barber problems with examples.
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 LFU, optimal page replacement algorithm.

1. Explain the condition for occurring deadlock in system.

**Group “D”**

**Comprehensive Question**

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

1. Calculate average turnaround time and average waiting time of following process:

|  |  |  |
| --- | --- | --- |
| Process | Arrival time | Execution time |
| P1 | 0 | 5 |
| P2 | 0 | 4 |
| P3 | 1 | 2 |
| P4 | 2 | 3 |
| P5 | 2 | 3 |
| P6 | 3 | 9 |
| P7 | 5 | 8 |
| P8 | 4 | 2 |

FIFO

SJF

SRTF

Round robin

1. Check the given process contain deadlock or not. And also define job sequence if deadlock can't occurs using Bankers algorithms;

Consider a system that contains five processes P1, P2, P3, P4, P5 and the three resource types A, B and C. Following are the resources types: A has 10, B has 5 and the resource type C has 7 instances.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Process | Max Need | | | Allocated | | | Available | | |
| A | B | C | A | B | C | A | B | C |
| P1 | 7 | 5 | 3 | 0 | 1 | 0 | 3 | 3 | 2 |
| P2 | 3 | 2 | 2 | 2 | 0 | 0 |  |  |  |
| P3 | 9 | 0 | 2 | 3 | 0 | 2 |  |  |  |
| P4 | 2 | 2 | 2 | 2 | 1 | 1 |  |  |  |
| P5 | 4 | 3 | 3 | 0 | 0 | 2 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

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