 **KIST COLLEGE OF MANAGEMENT**

**Full Marks: 60**

**Pass Marks: 36**

**Time: 3 hrs.**

**Affiliated to Tribhuvan University**

**Kamalpokhari, Kathmandu**

**March, 2024**

**Pre - Board Examination**

**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 Questions: [10 x 1 = 10]**

1. What is an operating system?
2. What is micro kernel?
3. What is Semaphore?
4. Define deadlock.
5. Explain the concept of file.
6. Explain virtual file system.
7. Mention the cause of thrashing.
8. Which disk scheduling technique has a drawback of starvation?
9. Define distributed operating system.
10. What do you mean by multi-threading?

**Group – B**

**Short Answer Questions: [5 x 3 = 15]**

1. Define resource allocation graph. Explain how resource graph can be used for detecting deadlock?
2. Describe the advantages and disadvantages of batch Operating system.
3. Distinguish between starvation and deadlock. How does the system schedule process using multiple queues?
4. Explain the concept of file sharing? What is the criteria for implementation file sharing?
5. How many bits are in logical and physical address?

**Group – C**

**Long Answer Questions: [3 x 5 = 15]**

1. Given a memory partitions of 100KB, 500KB,200KB, 300KB, and 600KB, how would each of the first fit and worst fit algorithms places processes of 212KB, 417KB, 112KB.
2. Consider the page references 7,0,1,2,0,3,0,4,2,3,0,1,5,4,2,3,6,03,2, Find the number of page fault using OPR and FIFO, with 4page frame.
3. What do you mean by one-time password authentication? Differentiate between worm and virus.

**Group – D**

**Comprehensive Answer Questions: [2 x 10 = 20]**

1. Define shell and system call. Suppose a disk has 201 cylinders, numbered from 0 to 200. At same time the disk arm is at cylinder 95, and there is a queue of disk access requests for cylinders 82,170,43,85,140,24,16 and 190. Calculate the seek time for the disk scheduling algorithm FCFS, SSTF, SCAN and C-SCAN.
2. Defined interactive system goals? List various interactive scheduling algorithms. Consider following process data and compute average waiting time and average turnaround time for RR (quantum 10) and priority scheduling algorithms.

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| PID | Burst Time | Arrival Time | Priority |
| A | 16 | 0 | 1 |
| B | 37 | 12 | 2 |
| C | 25 | 7 | 3 |

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