

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Operating System

Semester: Spring

Year : 2016
Full Marks: 100
Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What is an operating system? Explain the different major function of Operating System. 7
- b) What is process? Illustrate and define the different state of process with neat diagram. 8
2. a) Define deadlock and its causes. Explain deadlock prevention methods. 8
- b) What is the relationship between Thread and Process? Multi-programming (or multi-tasking) enables more than a single process to apparently execute simultaneously. How is this achieved on a uniprocessor? 7
3. a) Differentiate the role between kernel mode and user mode in operating system. 7
- b) Schedule the following processes applying following scheduling algorithm: 8

Process	Burst Time
P ₁	15
P ₂	20
P ₃	4
P ₄	9
P ₅	17

FCFS, SJF and Round Robin (quantum = 4 milli seconds)

Which algorithm would give the minimum average waiting time?

4. a) "Optimal Page replacement algorithm have lesser page fault than the FIFO Page replacement". Is the above statement correct? Explain your answer with proper examples. 7
- b) What is a TLB? How does the TLB map virtual and real addresses? Explain with mapping diagram. 8

5. a) Consider a disk queue with requests for I/O to blocks on cylinders in that order: 43, 79, 142, 56, 34 and 187. There are 200 cylinders numbered from 0 - 199 and the disk head starts at number 100. What is the total distance that the disk arm moves to satisfy all the pending requests for each of the following disk scheduling algorithms? 8
- i. FCFS
 - ii. SSTF
 - iii. SCAN
- b) What is file system implementation? Explain Contiguous List and Linked List file system implementations with their relative advantages and disadvantages. 7
6. a) Define Network Architecture. Describe OSI layered architecture. 7
- b) How distributed shared memory is different from message passing? 8
- Explain process management technique in Linux.
7. Write short notes on: (**Any two**) 2×5
- a) File System in Windows 2000
 - b) Race Condition
 - c) Context Switching