

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Operating System

Semester: Fall

Year : 2017
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) Define system call. Explain Operating system as resource manager. 7
b) Explain process states with suitable diagram. Draw the queuing diagram For 5 state process model. 8
2. a) What is Race Condition? What is the cause of race condition? Explain TSL Solution for Race Condition. 7
b) Why do we need IPC? Explain about Peterson's algorithm. 8
3. a) Explain conditions for deadlock. Explain two phase locking. 7
b) What do you mean by kernel? Explain the kernel implementation of process. 8
4. a) Schedule the following processes applying following scheduling algorithm: 8

Process	Burst Time
P ₁	10
P ₂	15
P ₃	5
P ₄	10
P ₅	15
P ₆	8

FCFS, SJF and Round Robin (quantum = 3 mili seconds)

Which algorithm would give the minimum average waiting time?

- b) What is Page Fault? Given below is the references made to the following pages by a program: 0, 2, 4, 1, 5, 1, 4, 3, 0, 3, 1 Show the successive pages residing in the three frames using replacement policy below. Also, state how many page faults will occur for each of the Replacement policies. 7
 - i. FIFO Page Replacement

- ii. NRU Page Replacement
 - iii. Optimal Page Replacement
5. a) Explain Direct Mapping and Block Mapping Techniques? What is TLB? 7
- b) 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
6. a) Define Contiguous List and Linked List file system implementations. Explain ACL with the help of diagram. 7
- b) What do you mean by RPC? Explain advantages and disadvantages of distributed OS. 8
7. Write short notes on: **(Any two)** 2×5
- a) File systems in Linux
 - b) ATM (Asynchronous Transfer Mode)
 - c) Unix