POKHARA UNIVERSITY

Level: Bachelor   Semester: Fall   Year   : 2016
Programme: BE   Full Marks: 100
Course: Operating System   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 the difference between multitasking and multiprogramming? List the essential properties for the Batch-oriented and time sharing operating system.   8

   b) Explain process control block (PCB) and process states in detail.   7

2. a) What are safe, unsafe states and deadlock? Explain banker's algorithm for dead lock detection.   8

   b) Define thread. Why it is called light weight process? Compare and contrast between process and thread.   7

3. a) What do you mean by concurrent process? Describe any two methods for process synchronization.   7

   b) Schedule the following processes applying (Highest Response Ratio Next) HRN scheduling algorithm. Assume that P1 is the first process and processor is instantly available for processing.   8

Process	P1	P2	P3	P4	P5
Arrival Time	1ms	2ms	4ms	7ms	9ms
Service Time	5ms	6ms	4ms	7ms	8ms

   i.   Find waiting time and turnaround time for each process and Find the order of execution.

   ii. Change the arrival time of P4 and P5 to 6ms find the execution order.

4. a) Draw and describe memory hierarchy diagram. How virtual memory increases the performance of computer system? Describe in detail.   7

   b) How many page fault occurs for your algorithm for the following reference string for three frames: 8

1, 1, 2, 2, 1, 4, 2, 3, 3, 5, 5, 4

Using FIFO, Optimal, LRU, and LFU page replacement algorithm?

5. a) Distinguish between block oriented and character oriented I/O devices. Explain the various steps involved in DMA transfer. 7

   b) Explain I-node and linked list allocation based file system implementation. 8

6. a) Define distributed operating system. Write about the issues that have to be considered while designing Distributed OS. 8

   b) What do you mean by context switching? Explain how context switching is done. How context switching helps for multiprogramming? 7

7. Write short notes on: (Any two) 2×5

   a) RPC(Remote Procedure Call)

   b) RAID

   c) Linux operating system