

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Operating System

Semester: Fall

Year : 2019
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) Explain types of kernel with necessary diagrams 7
b) Differentiate Process and Threads. Draw five stage process state diagram and explain each stage. 8
2. a) What is multi-threading? Explain different multi-threading model. What is the biggest advantage of implementing threads in user space? 8
b) What are classical IPC Problems? Explain reader-writer problem. 7
3. a) Write and explain solution for producer consumer problem using semaphore variables 8
b) What are the necessary characteristics of dead lock? Explain deadlock prevention and avoidance methods 7
4. a) Draw a Gantt chart and find average turnaround time and waiting time of the following process applying FCFS, STRF and round robin (with quantum = 3) scheduling algorithm. 8

Process	A	B	C	D	E
Arrival Time(sec)	0	3	4	6	10
Burst Time(sec)	6	3	6	4	2

- b) Suppose that a disk drive has 200 cylinders, numbered 0 to 199. The drive is currently serving a request at cylinder 50, and previous request was at cylinder 25. The queue of pending request is: 95, 180, 34, 119, 11, 123, 62, 64. Starting from the current head position, what is the total distance (in cylinder) that the disk arm moves to satisfy all pending request for FCFS, SSTF, SCAN and C-LOOK disk scheduling algorithm. 7
5. a) Explain the difference between internal and external fragmentation. How external fragmentation can be combat, illustrate with example. 7

- b) Describe the Amoeba System Architecture. How process management is done in Amoeba? 8
6. a) Define relative and absolute path. How file is implemented in a disk using contiguous, linked list and indexed allocation strategy? Explain with their merits and demerits? 8
- b) Explain the term distributed operating system with its characteristics, advantages and disadvantages. 7
7. Write short notes on: (**Any two**) 2×5
- a) File system in Unix and DOS
- b) Deadlock Condition
- c) RPC