POKHARA UNIVERSITY

Level: Bachelor	Semester: Spring	Year: 2020
Programme: BCA		Full Marks: 70
Course: Operating System		Pass Marks: 31.5
		Time: 2 hrs.

Candidates are required to answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group 'A': Attempt all questions (5×10=50)

1. Elaborate why Operating System is called extended machine? Explain different types of Operating System.

   OR

   Explain the use of system calls? Do you believe on the statement *"Multithreading improves the system performance of the system"?* If yes, explain with example
2. For the process listed in the following table draw a Gantt chart and also calculate the Average Turnaround Time and Average Waiting Time using the following algorithm.
   a) FCFS
   b) SJF(non-preemptive)
   c) Priority Based
   d) Round-robin(quantum=3)

Process	Arrival Time	Burst Time	Priority
A	0	3	1(L)
B	3	2	2
C	4	3	4(H)
D	6	4	3

3. Where do we use Banker's algorithm? Explain safe, unsafe and deadlock states with suitable example.
4. Define virtual memory. Explain its importance in memory management. Explain FIFO, OPR and LRU page replacement algorithms with examples.
5. Elaborate the importance of directory system? Explain various types of directory systems with their advantages and disadvantages with figure. Also explain, some of the security challenges related to OS security.

Group 'B': Problem-solving/case studies (1×20=20)

6. a) Differentiate between centralized and distributed OS highlighting their advantages and disadvantages. Explain the need of RPC in distributed system.

b) Explain Elevator algorithm and Shortest Seek Time First (SSTF) for disk scheduling with example of each.