

Roll No. ....

Total No. of Questions : 07]

[Total No. of Pages : 02

## Paper ID [BC404]

(Please fill this Paper ID in OMR Sheet)

BCA (Sem. - 4<sup>th</sup>)

OPERATING SYSTEM (BC - 4/4)

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.

### Section - A

Q1)

(10 × 2 = 20)

- a) What are the two main functions of an operating system?
- b) What is the principal advantage of multiprogramming?
- c) Differentiate user level threads from kernel level threads.
- d) Which is the best condition to prevent from a deadlock?
- e) Define the concept of dynamic linking.
- f) What is compaction and why it is used?
- g) What is the difference between local page replacement and global page replacement?
- h) How interrupt differ from trap?
- i) What is the purpose of system program?
- j) What is the function of dispatcher?

**Section - B**

(4 × 10 = 40)

- Q2)** (a) What is operating system? Explain simple batch processing, Multiprogramming, multitasking and distributed systems.  
(b) Explain different types of scheduling queues and types of schedulers.

- Q3)** Consider the following set of processes, with the length of CPU-burst time given in milliseconds.

<u>Process</u>	<u>Burst Time</u>	<u>Priority</u>
P1	10	3
P2	29	1
P3	3	3
P4	7	4
P5	12	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, and P5 all at time 0

- (a) What is the turnaround time of each process for using FCFS, SJF, a nonpreemptive priority (a smaller priority number implies a higher priority) and RR (quantum=10) scheduling.  
(b) What is the waiting time of each process for each of the scheduling algorithm in part a.
- Q4)** (a) Explain Dining Philosopher problem in process synchronization.  
(b) What are the four necessary conditions to occur a deadlock? Explain banker's algorithm.
- Q5)** (a) Why are page sizes always powers of 2?  
(b) Consider a logical address space of eight pages of 1024 words each, mapped onto a physical memory of 32 frames. How many bits are there in the logical address and physical address?
- Q6)** (a) What is the cause of thrashing? How it occurs and explain different methods to prevent from thrashing.  
(b) Explain the different operations performed on files.
- Q7)** Write short note on the following:  
(a) Operating system security threats.  
(b) Data encryption and decryption.

