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**Roll No. \_\_\_\_\_\_\_\_\_\_\_\_**

**BCA-3217**

**BCA (III Semester) Examination, Dec-2018**

**COMPUTER SCIENCE**

**Operating System**

*Time Allowed: Three Hours] [Maximum Marks: 70*

**Q.1.** Attempt any six of the following **5 \* 6= 30**

1. What are the major activities of Operating Systems from different perspectives?
2. Discuss the essential properties of Distributed Systems and Real Time Systems.
3. What is thread? How it is different form Process?
4. Explain the concept of Interprocess Communication.
5. What is a safe state and what is its use in deadlock avoidance.
6. What is scheduler? Discuss all types of schedulers.
7. Describe first fit, best fit and worst fit allocation algorithms.
8. Explain the difference between Paging and Segmentation.

**Q.2.** What is an Operating System? Discuss about its role as resource allocator. **10**

**OR**

What do you mean by PCB? Where is it used? What are its contents? Explain.

**Q.3.** Define Process. Explain Process states with a suitable diagram.  **10**

**OR**

Consider the following set of processes with the length of the CPU Burst time given in milliseconds:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Process | P1 | P2 | P3 | P4 | P5 |
| Burst time | 10 | 29 | 3 | 7 | 12 |

Calculate the average waiting time and average turn around time for FCFS, SJFS and RR scheduling (quantum = 10 milliseconds).

**Q. 4.** What is Deadlock? Discuss the necessary conditions for the occurrence of deadlock and how it can be prevented? **10**

**OR**

Consider the following snapshot of a system: **Allocation**  **Max**  **Available**

A B C D A B C D A B C D

P0 0 0 1 2 0 0 1 2 1 5 2 0

P1 1 0 0 0 1 7 5 0

P2 1 3 5 4 2 3 5 6

P3 0 6 3 2 0 6 5 2

P4 0 0 1 4 0 6 5 6

Answer the following questions using the Bankers algorithm:

1. What is the content of the matrix *Need*?
2. Is the system in a safe state?

If a request from process P1 arrives for (0,4,2,0), can the request be granted immediately?

**Q.5.** Consider the following page–reference string: **10**

1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6.

How many page faults would occur for the following replacement algorithms?

(Assuming four frames)

**FIFO replacement** And

**LRU replacement**.

**OR**

Discuss any two of the following:

1. Virtual Memory
2. Demand Paging
3. Page replacement