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Paper Code : BCAC302 Operating System

Time Allotted : 3 Hours *Full Marks :70*

The Figures in the margin indicate full marks.
Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer any ten of the following : [1 x 10 = 10]

(I) A system is in the safe state if _____

(II) A process is in a “Blocked” state waiting for some I/O service. When the service is completed, it goes to the _____

(III) The number of processes completed per unit time is known as _____

(IV) Which module gives control of the CPU to the process selected by the short-term scheduler?

(V) Concurrent access to shared data may result in _____

(VI) For non sharable resources like a printer, mutual exclusion _____

(VII) _____ is the concept in which a process is copied into the main memory from the secondary memory according to the requirement.

(VIII) When a page fault occurs ?

(IX) What is the main disadvantage of spinlocks?

(X) In segmentation, each address is specified by _____

(XI) The relocation register helps in _____

(XII) All unsafe states are _____

Group-B (Short Answer Type Question)

Answer any three of the following [5 x 3 = 15]

2. Explain SMP. [5]
3. (a)What is virtual memory? [5]
   (b)What is thrashing?
4. What is the difference between logical address space and physical address space? [5]
5. Discuss about spooling. [5]
6. Differentiate between paging and segmentation. [5]

Group-C (Long Answer Type Question)

Answer any three of the following [15 x 3 = 45]

7. (a) Discuss about different types of schedulers. [7]
   (b) Draw and describe the structure of PCB. [8]
8. (a) What is demand paging? Explain pure demand paging? [5]
   (b) Consider the following reference string: 0,2,1,6,4,0,1,0,3,1,2,1 and frame no is 4. Find out the total no. of page fault by applying the following page replacement algorithm: FIFO, Optimal & LRU. [10]
9. (a) What is mutual exclusion' problem concerning to concurrent process ? Explain with example. [5]
   (b) Describe critical section problem [5]
   (c) State the producer-Consumer problem. [5]
10. (a) Write short notes on the following : Digital signature [5]
    (b) Thrashing [5]
    (c) Page replacement algorithm. [5]
11. (a) What do you mean by race condition? [5]
    (b) Explain in detail the operations of semaphore. [5]
    (c) Explain the classical problems of synchronization. [5]

*** END OF PAPER ***