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CSE202
[ET]

Enrol. No. .....

END SEMESTER EXAMINATION : APRIL-MAY, 2019

OPERATING SYSTEM

Time : 3 Hrs. *Maximum Marks : 70*

Note: ***Attempt questions from all sections as directed. Use of simple calculator is allowed.***

SECTION – A (30 Marks)

Attempt any **five** *questions out of* **six**.
Each question carries **06** *marks.*

1. Explain the requirement of system call with an example. List various types of system calls.

2. Differentiate between the following :

   (i) Multiprogramming, multitasking and multiprocessing

   (ii) Program and process

3. Given five memory partitions of 100 Kb, 500 Kb, 200 Kb, 300 Kb, 600 Kb (in order), how would the

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first-fit, best-fit, and worst-fit algorithms place processes of 212 Kb, 417 Kb, 112 Kb, and 426 Kb (in order)? Which algorithm makes the most efficient use of memory?

4. (a) Describe various steps involved in a DMA transfer. (4)

(b) Some DMA controllers support direct virtual memory access, where the targets of I/O operations are specified as virtual addresses and a translation from virtual to physical address is performed during the DMA. How does this design complicate the design of the DMA controller? What are the advantages of providing such a functionality? (2)

5. Consider the following set of processes, with the length of CPU burst given in milliseconds:

Process	Burst Time	Priority	Arrival Time
P1	10	3	0
P2	1	1	1
P3	2	4	2
P4	1	5	3
P5	5	2	4

The Processes will arrive according to their arrival time. Compute Average Waiting Time and Average Turnaround Time by using Round Robin Scheduling (Time quantum = 4) and preemptive Priority Scheduling (a smaller number implies higher priority).

6. Draw the diagrams showing the concepts of context switching and interrupt-driven I/O cycle.

SECTION – B (20 Marks)

Attempt any **two** *questions out of* **three**.
Each question carries **10** *marks.*

7. What are the different attributes of a file? Describe the three different file allocation methods in the hard disk and discuss their relative advantages and disadvantages.

8. Consider a program that consists of 8 pages (from 0 to 7) and we have 3 page frames in the physical memory for the pages.

The page reference string is : 7, 2, 3, 1, 2, 5, 3, 4, 6, 7, 7, 1, 0, 5, 4, 6, 2, 3, 0,1

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processes may complete. Otherwise, illustrate why the state is unsafe.

(i) Available = (0, 3, 0, 1)

(ii) Available = (1, 0, 0, 2) (8)