CSE202                                                                                   Enroll. No.  …………..

[ET]

## END SEMESTER EXAMINATION :

## APRIL – MAY, 2017

### OPERATING SYSTEM

Time: 3 Hrs.                                                                      Maximum Marks : 70

Note: Attempt questions from all sections as directed.

### SECTION – A                                        (30 Marks)

Attempt any **five** questions out of **six**.

Each question carries **06** marks.

1.      What do you mean by system software? Define operating system and its services.

2.      Differentiate between process and a program. Define PCB (Process Control Block) and its importance.

3.      In a paged segment system a virtual address consist of 128 bits of which 48 bits are displacement, 44 bits are segment number & 36 bits are page no. calculate the following:
   i.   Page Size
   ii.  Max. Segment Size
   iii. Max. No. of Pages & Segments

4.      What are major attributes of a file? Write briefly about the various file operations.

5.      Write all important steps to perform DMA transfer.

6.      Compare and contrast between Multiprogramming and Multiprocessing.

### SECTION – B                                        (20 Marks)

Attempt any **two** questions out of **three**.

Each question carries **10** marks.

7.

        a)      Draw the state diagram of a process from its creation to termination, including all transitions, and briefly elaborate every state and every transition.

b)  CPU burst time indicates the time, the process needs the CPU. The following are the set of processes with their respective CPU burst time (in milliseconds).

| Processes | CPU-burst time |
|-----------|----------------|
| P1 | 10 |
| P2 | 5 |
| P3 | 5 |

Calculate the average waiting time if the process arrived in the following order:
  i.    P1, P2 & P3

  ii.   P2, P3 & P1

8.

  a)  Given five memory partitions of 200Kb, 450Kb, 100Kb, 300Kb, 500Kb (in order), how would the first-fit, best-fit, and worst-fit algorithms place processes of 312Kb, 215Kb, 132Kb, and 455Kb (in order)? Which algorithm makes the most efficient use of memory?          (6)

  b)  Explain essential features of various File allocation methods with suitable diagram.          (4)

9.    Write short notes on following:

  a) Contiguous Allocation

  b) Linked List Allocation for File System Implementation

**SECTION – C**                    **(20 Marks)**

(Compulsory)

10.

  a)    Consider the following set of jobs with their arrival times, execution time (in minutes), and deadlines.

| Job Ids | Arrival Time | Execution Time | Deadline |
|---------|--------------|----------------|----------|
| 1 | 0 | 5 | 5 |
| 2 | 1 | 15 | 25 |
| 3 | 3 | 12 | 10 |
| 4 | 7 | 25 | 50 |
| 5 | 10 | 5 | 12 |

Calculate the turn-around time and the throughput for FCFS and RR scheduling algorithms.                                                                                                 (10)

b)

| Process | Arrival Time | Burst Time |
|---------|--------------|------------|
| P1 | 0.0 | 7 |
| P2 | 2.0 | 4 |
| P3 | 4.0 | 1 |
| P4 | 5.0 | 4 |

Calculate the turn-around time and the throughput for preemptive and non-preemptive SJF scheduling algorithms.                                                                    (10)