Note  :  i)  **All the questions are compulsory.**

ii)  **Figures to the right indicate full marks.**

iii)  **Draw diagram wherever needed.**

**Q.1.**  **Attempt (any 2):**                                                                        [10]

a)  Explain abstract view of computer system with diagram.

b)  What are the different phases of compiler ?

c)  Explain multiprocessing operating system with its advantages.

**Q.2.**  **Attempt (any 2):**                                                                        [10]

a)  What are the different types of system calls ?

b)  What is virtual machine explain with example ?

c)  Explain layered structure of operating system.

**Q.3.**  **Attempt (any 2) :**                                                                       [10]

a)  Write short note on structure of process control block.

b)  Calculate average waiting time and draw gantt chart for following processes using FCFS (First Come First Serve) Algorithm.

| Process | Burst Time |
|---------|------------|
| $P_1$   | 5          |
| $P_2$   | 2          |
| $P_3$   | 8          |
| $P_4$   | 7          |

c)  Define Threads, Benefits of multithreading.

**Q.4.**  **Attempt (any 2):**                                                                        [10]

a)  Explain concept of paging.

b)  Write a short note on Logical Versus Physical Address Space.

c)  Consider the following page reference string

7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1

How many page faults would occur for FIFO replacement algorithm consider frame size = 3.

(P.T.O.)

**Q.5.** **Attempt (any 2):** [10]

a) What is deadlock ? How to prevent deadlock occurance.

b) Explain file attributes.

c) Explain Network File System (NFS) protocol.

**Q.6** **Attempt (any 2):** [10]

a) Write short note on Application I/O interface.

b) Explain Access matrix.

c) Explain different types of viruses.

— THE END —