3 Hours/100 Marks

Seat No.

Instructions : (1) **All** questions are **compulsory**.
(2) Illustrate your answers with **neat** sketches **wherever** necessary.
(3) Figures to the **right** indicate **full** marks.
(4) Assume suitable data, if **necessary**.

MARKS

1. a) Attempt **any three** of the following :   **12**

   a) What is process ? Explain the different process state with the help of state diagram.

   b) State generations of operating system. Describe any one generation.

   c) Draw Microkernal OS structure.

   d) Explain First come First serve scheduling algorithm.

   b) Attempt **any one** of the following :   **6**

   a) Describe following system :

      1) Multiprocessor system

      2) Batch operating system

   b) Describe the term :

      1) Scheduling queues

      2) Scheduler

      3) Context switch.

2. Attempt **any four** of the following : **16**

   a) Explain Real time OS with the help of diagram. List its type.

   b) List services provided by OS and explain any four of them.

   c) Define PCB (Process Control Block) with suitable diagram.

   d) Define following terms :
      1) Dead line   2) Response time
      3) Throughput   4) Turnaround time

   e) Describe functions of OS in detail.

   f) Describe creation and termination operation on process.

3. Attempt **any four** of the following : **16**

   a) What is system call ? Explain use of any two categories of system call.

   b) What is multithreading ? Explain with suitable diagram.

   c) Explain Round robin algorithm with suitable example.

   d) Explain any four operations which can be performed on file.

   e) Describe architecture of UNIX OS with the help of diagram.

4. a) Attempt **any three** of the following : **12**

   a) List components of OS. Explain any one in detail.

   b) Describe four conditions for dead locking.

   c) Describe types of scheduler used in scheduling.

   d) Compare paging and segmentation.

b) Attempt **any one** of the following : **6**

   a) What are the different file allocation method ? Explain any one in detail with example.

   b) Consider the following set of processes with arrival time as below :

Process	Priority	Arrival Time	CPU Burst (in ms)
P1	2	0	5
P2	3	1	6
P3	4	2	7
P4	1	3	3

Find out average waiting time by using

1) Non-preemptive SJF

2) Preemptive SJF

3) FCFS

5. Attempt **any two** of the following : **16**

a) Explain :

   1) Monolithic OS structure

   2) Layered OS structure

b) With suitable diagram explain interprocess communication model.

c) What is partitioning ? Explain concept of variable memory partitioning with example.

6. Attempt **any four** of the following : **16**

   a) Consider the following page reference string – 1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5. How many page faults occur for FIFO replacement algorithm assuming 3 frames ?

   b) State and describe different memory management technique.

   c) Compare LINUX and UNIX.

   d) Describe I/O Burst and CPU burst cycle. Give one example.

   e) Describe Shortest Remaining Time (SRTN) algorithm with the help of example.

   _____