17512

21718

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

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

(i) List and draw a neat labelled diagram of four components of a computer system.

(ii) List three main levels of data storage and explain cache storage.

(iii) List and draw a neat labelled diagram of process state.

(iv) List merits of I/O scheduling (Four points) and Demerits of I/O scheduling.

Marks

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

(i) Explain the working of Inter-process communication considering.

1) Shared memory

2) Message passing

(ii) List four Deadlock prevention condition and explain the following terms.

1) Removal of "No preemption" condition.

2) Elimination of "Circular wait" related to deadlock prevention condition.

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

a) Define clustered systems? List four characteristics of clustered systems.

b) Explain following two services of operating systems.

(i) File system manipulation

(ii) Resource Allocation

c) Define synchronization

Explain

(i) Blocking

(ii) Non Blocking in message passing

d) List four process scheduling criteria and explain the term Turnaround in detail.

e) Explain Deadlock Avoidance with example.

f) Explain "Bitmap" method in free space management technique.

Marks

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

a) Explain Time sharing OS in detail.

b) List types of system call and explain the system call – "Information Maintenance".

c) Differentiate between long term scheduling and medium term scheduling.

d) The Jobs are scheduled for execution as follows – solve the problem by using preemptive SJF (Shortest Job First).
Find average waiting time using Gantt chart.

Process	Arrival Time	Burst Time
P1	0	10
P2	1	04
P3	2	14
P4	3	08

e) Explain the working of Two-level directory structure with neat labelled diagram.

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

(i) List Advantages and Disadvantages of Batch Monitoring functions. (Four points)

(ii) Explain major activities of memory management component of an operating system.

(iii) Define the following with respect to resources.

1) A preemptable resource

2) A non-preemptable resource

(iv) List four types of UNIX files and draw Unix file system.

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

(i) Explain working of CPU switch from process to process with diagram.

(ii) Explain CPU and I/O burst cycle with the help of diagram.

Marks

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

a) Describe concept of file, its types and operations on file attributes in detail.

b) Explain swapping in operating system with diagram and example.

c) Comparison between Linux and UNIX. (Four points)

(i) User interface

(ii) Name of provider

(iii) Processing speed

(iv) Security

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

a) List characteristics of operating system for smooth functioning of a computer – system. (Eight points)

b) With neat labelled diagram explain the working of Booting process.

c) With neat labelled diagram explain Unix layered structure.

d) Explain the working of semaphores.

e) Give difference between

External fragmentation and

Internal fragmentation (four points)