

17512

21819

3 Hours / 100 Marks

Seat No.

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- 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.

Marks

1. a) **Attempt any THREE of the following:** **12**
- (i) Describe 2nd and 3rd generations of operating system.
- (ii) Describe layered structure of operating system.
- (iii) Explain concept of virtual memory with diagram.
- (iii) Explain real time operating system. Explain its types.
- b) **Attempt any ONE of the following:** **6**
- (i) Differentiate between segmentation and paging (any 6 points)
- (ii) Explain any six services of operating system. Draw diagram of services of OS.

P.T.O.

- 2. Attempt any FOUR of the following:** **16**
- a) Explain file system of UNIX
 - b) Describe multiprocessor operating system with its two advantages.
 - c) List different directory structure and explain any one in detail.
 - d) Explain booting procedure of UNIX.
 - e) Explain process control block with suitable diagram.
 - f) Explain Shortest Remaining Time Next (SRTN) scheduling algorithm with example.
- 3. Attempt any FOUR of the following:** **16**
- a) Explain execution of system call with diagram.
 - b) Explain different file attributes.
 - c) Explain any four benefits of using threads.
 - d) Write steps of banker's algorithm to avoid deadlock.
 - e) Differentiate between pre-emptive and non-pre-emptive scheduling (any 4 points)
- 4. a) Attempt any THREE of the following:** **12**
- (i) Differential between Monolithic and Microkernel OS. (any four points)
 - (ii) Explain critical section problem with example.
 - (iii) Explain different activities of I/O system management components of OS.
 - (iv) Explain user threads and kernel threads.
- b) Attempt any ONE of the following:** **6**
- (i) Explain different methods of inter process communication with help of diagram.
 - (ii) Explain different file access methods.

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

- a) Explain following multithreading models with advantages and disadvantages
- (i) Many to one
 - (ii) Many to many
- b) Calculate average locating time for SJF (Shortest Job First) and round robin (RR) algorithm for following table.

| Process | Burst time |
|----------------|------------|
| P ₁ | 10 |
| P ₂ | 04 |
| P ₃ | 09 |
| P ₄ | 06 |

(Time slice 4 m sec).

- c) Explain first come first served (FCFS) algorithm. Give one example. State any one advantage and one disadvantage.

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

- a) Explain main memory management component of OS with its activities.
- b) Explain structure of Unix OS.
- c) Explain distributed operating system with its advantages and disadvantages.
- d) List different file allocation methods. Explain any one in detail.
- e) Explain context switch with help of diagram.
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