

17512

11920

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.
 - (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) Describe generations of operating system.
 - (ii) Write difference between Monolithic operating system structure and Microkernel operating system structure (four points)
 - (iii) Enlist the different states of process and draw diagram of process state transitions.
 - (iv) With suitable diagram, describe the concept of swapping.

P.T.O.

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

6

- (i) With suitable diagram describe scheduling queues.
- (ii) Calculate average waiting time for following scheduling Algorithm.
 - 1) Round Robin scheduling algorithm
(Time slice : 2m sec)
 - 2) SIF scheduling

Jobs	Arrival Time	Processing time
A	0	3
B	1	1
C	2	5
D	3	4

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

16

- a) Describe distributed system with its two advantages.
- b) List and describe any four services provided by operating system.
- c) Describe critical section problem with example.
- d) Describe the algorithm for finding out whether or not a system is in a safe. State (Safety Algorithm)
- e) Give difference between contiguous file allocation and linked file allocation with respect to access, fragmentation, size and speed.
- f) With suitable diagram, describe file system of UNIX.

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

16

- a) Describe real time system with its two types.
- b) Enlist the activities of process management component and file management component of operating system.
- c) Describe any two models of multithreading.
- d) Describe the concept of paging with neat labelled diagram.
- e) Give difference between linux and unix with respect to user interface, Architecture, processing speed and security.

- 4. a) Attempt any THREE of the following:** **12**
- (i) Describe with diagram CPU utilization in multiprogramming system.
 - (ii) State and describe any four types of system calls.
 - (iii) Give difference between short term scheduler and long term scheduler (four points)
 - (iv) Describe with suitable diagram two level directory structure. Also state its two advantages.
- b) Attempt any ONE of the following:** **6**
- (i) Describe layered structure of operating system with two advantages and two disadvantages.
 - (ii) Write steps involved in Banker's algorithm. Also give one example for it.
- 5. Attempt any TWO of the following:** **16**
- a) Describe with suitable diagram shared memory system and message passing system. Also write two advantages of each system.
 - b) Enlist the deadlock prevention methods and describe any two in detail.
 - c) Describe fixed and variable memory partitioning techniques with suitable diagram. Also state advantage and disadvantage of each.
- 6. Attempt any FOUR of the following:** **16**
- a) State and describe any four operations on file.
 - b) Describe with suitable diagram the concept of system call.
 - c) Describe context switch with suitable diagram.
 - d) Describe FCFS (First come first served) algorithm with example.
 - e) Explain the structure of unix operating system with diagram.
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