

22516

23242

3 Hours / 70 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.      Attempt any <u>FIVE</u> of the following:	10
a) List different types of operating system.	
b) State any four services provided by an operating system.	
c) Draw process state diagram.	
d) State two features of non-preemptive scheduling.	
e) Define following terms:	
i)     Memory compaction	
ii)    Fragmentation	
f) Write syntax of PWD command and explain its use with the help of suitable example.	
g) List any four file operations.	

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|-----------|--|-----------|
| <b>2.</b> | <b>Attempt any <u>THREE</u> of the following:</b>  | <b>12</b> |
| a)        | Explain Resource management of an operating system.  |           |
| b)        | Explain different components of operating system.  |           |
| c)        | Describe message passing system of interprocess communication (IPC).                                     |           |
| d)        | What is CPU Scheduler? Explain the preemptive and nonpreemptive type of scheduling.                      |           |
| <b>3.</b> | <b>Attempt any <u>THREE</u> of the following:</b>  | <b>12</b> |
| a)        | Define Process. Draw a Process Control Block and explain the information in PCB.                         |           |
| b)        | Define deadlock. State the conditions necessary for deadlock.  |           |
| c)        | Explain the following terms with respect to memory management:<br>i) Dynamic relocation<br>ii) Swapping  |           |
| d)        | With suitable diagram, explain how contiguous file allocation is performed?                              |           |
| <b>4.</b> | <b>Attempt any <u>THREE</u> of the following:</b>  | <b>12</b> |
| a)        | Compare between Time sharing operating system and multiprogramming operative system.                     |           |
| b)        | Explain any four types of system call.   |           |
| c)        | Describe how context switch is executed by operating system.   |           |
| d)        | Compare Short Job First (SJF) and Shortest Remaining Time (SRTN) scheduling algorithm (any four points). |           |
| e)        | Describe variable partitioning with the help of suitable example.  |           |

**5. Attempt any TWO of the following:** **12**

- a) Explain the use of following OS tools:
- Device Manager
  - Task Scheduler
- b) Explain user level thread and Kernel level thread with its advantages and disadvantages.
- c) Consider the string:  
0, 1, 2, 3, 0, 1, 2, 3, 0, 1, 2, 3, 4, 5, 6, 7 with frame size 3 and 4, calculate page fault in both the cases using FIFO algorithm.

**6. Attempt any TWO of the following:** **12**

- a) What is the average turnaround time for the following process using :
- FCFS scheduling algorithm
  - SJF non-preemptive scheduling algorithm
  - Round Robin Scheduling algorithm.

Process	Arrival time	Burst time
P <sub>1</sub>	0	8
P <sub>2</sub>	1	4
P <sub>3</sub>	2	1

- b) Explain bit map vector and linked list free space management techniques with its advantages and disadvantages.
- c) Explain with diagram single level directory structure and two level directory structure with its advantages and disadvantages.
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