

# 315353

**12526**

**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 answer 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 FIVE of the following: **10****
- a) Define operating system, give any two examples of operating system.
  - b) Write full form of :-
    - i) PCB
    - ii) IPC.
  - c) List any four scheduling algorithms.
  - d) State how FIFO page replacement algorithm works?
  - e) List different types of files in file management.
  - f) Draw monolithic kernel operating system structure.
  - g) Give reasons why scheduling is important in operating system.

P.T.O.

**2. Attempt any THREE of the following: 12**

- a) List any four important functions of operating system.
- b) Define following terms :-
  - i) CPU utilization
  - ii) Throughput
  - iii) Turn around time
  - iv) Waiting time.
- c) List multithreading models and explain any one.
- d) Define paging and explain in detail.

**3. Attempt any THREE of the following: 12**

- a) Differentiate between Linux and Windows. (Any four points)
- b) Draw and explain PCB block diagram.
- c) Explain swapping with neat diagram.
- d) List all types of directory structure in file management and explain any one.

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

- a) List all types of system calls and explain any one.
- b) Explain long term scheduler in brief.
- c) For the following problem calculate the average turnaround time and average waiting time using shortest remaining processing time first algorithm :-

Process	Arrival Time	Burst Time
P1	00 ms	05 ms
P2	01 ms	03 ms
P3	02 ms	03 ms
P4	04 ms	01 ms

- d) Give any four reasons of causing page fault.
- e) List four file allocation methods and explain any one.

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

- a) Draw and explain microkernel OS structure.
- b) Draw and explain IPC.
- c) State and explain Banker's Algorithm with example.

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

- a) For the following problem, calculate the average waiting time and average turn around time using Round Robin Algorithm.  
Criteria : "Time Quantum" = 02

**Mode : "Pre emptive"**

Process ID	Arrival Time	Burst Time
P1	00	05
P2	01	03
P3	02	01
P4	03	02
P5	04	03

- b) Differentiate between fixed and variable partitioning technique in memory management.
  - c) List different types of file attributes. Explain Linux file system with suitable diagram.
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