



# 17512

**15162**

**3 Hours / 100 Marks**

Seat No.

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- Instructions :** (1) *All questions are compulsory.*  
(2) *Figures to the right indicate full marks.*  
(3) *Assume suitable data, if necessary.*

- Marks**  
**(4×3=12)**
1. a) Attempt **any 3** of the following.
- 1) List any four functions of operating system.
  - 2) Describe real time operating system in brief.
  - 3) What is process management ? State four functions to be performed by OS for process management.
  - 4) What is file ? List and explain attributes of files.
- b) Attempt **any one** of the following. **(6×1=6)**
- 1) Describe the contiguous allocation method for file, state any two merits and demerits.
  - 2) Describe following operating system structures.
    - i) Monolithic
    - ii) Microkernel.
2. Attempt **any 4** of the following. **(4×4=16)**
- a) Compare Unix and Linux operating system w.r.t.
    - 1) User interface
    - 2) Name of provider
    - 3) Processing speed
    - 4) Security
  - b) Describe evolution of operating system.
  - c) With neat diagram describe use of Process Control Block (PCB).
  - d) Define the following terms :
    - i) Preemptive scheduling
    - ii) Nonpreemptive scheduling.
  - e) Describe working of sequential and direct access methods.
  - f) Explain in brief the unix file system.
3. Attempt **any 4** of the following. **(4×4=16)**
- a) List any four operating system services and describe in one/two sentences.
  - b) Describe concept of virtual memory with suitable example.
  - c) Draw the process state diagram and describe each state in one/two sentences.
  - d) State and explain criteria in CPU scheduling.
  - e) What is FCFS algorithm ? Describe with example.

**P.T.O.**



4. a) Attempt **any 3** of the following.

(4×3=12)

- a) What is inter process communication ? Describe any one technique of it.
- b) Differentiate between long term scheduler and short term scheduler on basis of
  - i) Selection of job
  - ii) Frequency of execution
  - iii) Speed
  - iv) Accessing which part of system.
- c) What is system call ? List types of system call with one example of system call.
- d) What are the activities involved in secondary storage management ?

b) Attempt **any one**.

(6×1=6)

- a) Describe how semaphores are useful for solving problems of interprocess communication.
- b) Write in short on basic memory management.

5. Answer **any 2** of the following.

(8×2=16)

- a) Describe following terms
  - 1) Scheduling queues
  - 2) Scheduler
  - 3) Thread
  - 4) Multithreading.
- b) Solve the following problem using SJF and Round Robin (RR) scheduling algorithm. Find average waiting time for each algorithm.

Process	Burst time
P <sub>1</sub>	10
P <sub>2</sub>	3
P <sub>3</sub>	7
P <sub>4</sub>	5

- c) Explain how priority scheduling algorithm works with suitable example, also list advantages and disadvantages.

6. Answer **any 4** of the following.

(4×4=16)

- a) Describe how context switch is executed by operating system.
  - b) Explain how parameter passing is done while implementing system calls.
  - c) What is multiprocessor system ? Give two advantages of it.
  - d) Draw and explain structure of unix operating system.
  - e) Describe optimal page replacement algorithm with example.
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