

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER - 2024**

**OPERATING SYSTEMS**

(Maximum Marks:100)

(Time: 3 Hours)

**PART - A**

( Maximum Marks : 10 )

**Marks**

I Answer **all** the questions in one or two sentences. Each question carries 2 marks.

1. What is system software?
2. Define process.
3. Define race condition.
4. What is the purpose of Virtual Memory?
5. Define File System.

( 5 x 2 = 10 )

**PART - B**

( Maximum Marks: 30 )

II Answer **any five** questions from the following. Each question carries 6 marks.

1. Explain the features of an operating system.
2. Compare multiprogramming and multiprocessing.
3. Explain PCB with its structure.
4. Summarize RR scheduling with an example.
5. Differentiate between physical and logical address space.
6. What is thrashing?
7. Explain Virtual Box.

( 5 x 6 = 30 )

**PART - C**

(Maximum Marks: 60)

(Answer **one full** question from each unit. Each full question carries 15 marks.)

**UNIT - I**

III (a) Explain process management and memory management functions of OS. (9)

- (b) Compare Windows and UNIX operating systems. (6)

**OR**

- IV (a) Explain Assembler, Compiler and Interpreter. (9)  
(b) Describe real-time systems. (6)

**UNIT – II**

- V (a) Describe the different states of a process, accompanied by a diagram. (8)  
(b) What are the requirements for a solution to the Critical Section Problem? (7)

**OR**

- VI (a) Consider the following processes arriving in the order P1, P2, P3 and P4, with their respective burst times: P1 (6), P2 (8), P3 (7), P4(3). Calculate the waiting time for each process using First-Come, First-Served (FCFS) and Shortest Job First (SJF) scheduling algorithms (9)  
(b) Explain Deadlock prevention. (6)

**UNIT – III**

- VII (a) Write short notes on FIFO, LRU and optimal page replacement algorithm. (9)  
(b) Compare Internal and external fragmentation. (6)

**OR**

- VIII (a) Explain paging with a paging hardware diagram. (10)  
(b) Write the steps in handling a page fault. (5)

**UNIT – IV**

- IX (a) Summarize single, two-level and tree-structured directories. (9)  
(b) Explain various file operations. (6)

**OR**

- X (a) Compare linked and indexed file allocation methods. (8)  
(b) Discuss VMware architecture diagram. (7)

\*\*\*\*\*