

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/  
COMMERCIAL PRACTICE, APRIL – 2021**

**OPERATING SYSTEMS**

[Maximum Marks: 75]

[Time: 2.15 Hours]

**PART-A**

(Answer *any three* questions in one or two sentences. Each question carries 2 marks)

**I**

1. Define System Software.
2. Define a thread.
3. Write any four functions of OS.
4. Define thrashing.
5. Define thin client. (3×2=6)

**PART-B**

(Answer *any four* of the following questions. Each question carries 6 marks)

**II**

1. Compare the functions of compilers and interpreters.
2. Explain different file operations.
3. Explain the functions of PCB. How does its structure facilitate these functions?
4. Explain multilevel feedback queue scheduling.
5. Explain different address binding techniques.
6. Explain paging hardware.
7. Explain the need of virtualization. (4×6=24)

**PART-C**

(Answer *any of the three units* from the following. Each full question carries 15 marks)

**UNIT-I**

- III (a) Compare multiprogramming and multiprocessing OS. (8)
- (b) Explain functions of assembler. (7)

**OR**

- IV (a) Write short notes on batch OS and time sharing OS. (8)  
 (b) What is a loader? Explain its functions. (7)

**UNIT – II**

- V (a) Write differences between pre-emptive and non pre-emptive scheduling. (5)  
 (b) What are the necessary and sufficient conditions for a deadlock to occur? Explain deadlock with the help of a resource allocation graph. (10)

**OR**

- VI (a) Define critical section problem. What are requirements for its solutions? (5)  
 (b) For the four processes given below, draw Gantt chart and find out the average waiting time using Shortest Remaining Time Next and Shortest Job First scheduling algorithms. Which Algorithm is optimal here. (10)

Process	Arrival Time	Burst Time
$P^1$	0	8
$P^2$	1	4
$P^3$	2	9
$P^4$	3	5

**UNIT – III**

- VII (a) Explain first fit, best fit and worst fit memory allocation strategies. (6)  
 (b) What is demand paging? Explain the steps to handle page fault with the help of a neat sketch (9)

**OR**

- VIII (a) For the below given page reference string find the page faults under Optimal and LRU page replacement algorithms. Number of available page frames is 3.  
 7 0 2 0 3 0 4 2 3 0 3 2 2 0 7 0 1. (10)  
 (b) Distinguish between internal and external fragmentation. (5)

**UNIT – IV**

- IX (a) Explain different directory structures. (9)  
 (b) State software virtualization and its advantages. (6)

**OR**

- X (a) Explain Linked and indexed file allocation methods. (9)  
 (b) Explain the types of hardware virtualization. (6)