

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

**OPERATING SYSTEM**

[Maximum marks: 75]

[Time: 3 Hours]

**PART A**

**I. Answer all the following questions in one word or one sentence. Each question carries 1 mark.**

**(9 x 1 = 9 Marks)**

		Module outcome	Cognitive level
1	Define software.	M1.01	R
2	Write any two system software.	M1.01	R
3	What is ready queue?	M2.03	R
4	What is the difference between IO bound and CPU bound processes?	M2.01	R
5	Write any two scheduling criteria.	M2.03	U
6	Define Belady's anomaly.	M3.01	R
7	Name one solution for external fragmentation.	M3.04	U
8	Define UFD.	M4.04	R
9	Expand SSTF.	M4.01	R

**PART B**

**II. Answer any eight questions from the following. Each question carries 3 marks.**

**(8 x 3 = 24 Marks)**

		Module outcome	Cognitive level
1	Write short note on time sharing system.	M1.04	U
2	Write any three functions of an operating system.	M1.03	U
3	Explain the structure of PCB.	M2.02	R
4	Distinguish between preemptive and non-preemptive scheduling algorithms.	M2.04	R
5	Explain the concept of virtual memory.	M3.04	U
6	Explain various CPU schedulers.	M2.03	U
7	What are the difference between logical address and physical address?	M3.01	R
8	What are the various address binding schemes?	M3.03	R
9	What are the various file allocation methods?	M4.04	U
10	Explain two level directory structure.	M4.03	R

**PART C**

**Answer all questions. Each question carries seven marks.**

**(6 x 7 = 42 Marks)**

		<b>Module outcome</b>	<b>Cognitive level</b>																		
III	Explain multiprocessor and real time operating system. <b>OR</b>	M1.04	U																		
IV	Write notes on (a) Assembler (3 marks) (b) Loader (2 marks) (c) Interpreter (2 marks)	M1.02	U																		
V	Explain resource allocation graph with a neat diagram. <b>OR</b>	M2.04	R																		
VI	Define deadlock. What are the necessary conditions for deadlock?	M2.05	U																		
VII	Explain critical section problem. <b>OR</b>	M2.06	U																		
VIII	Calculate the waiting time for the following processes with SJF and Priority scheduling. Arrival time = 0.  <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Process</th> <th>Burst time</th> <th>Priority</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>12</td> <td>3</td> </tr> <tr> <td>P2</td> <td>3</td> <td>1</td> </tr> <tr> <td>P3</td> <td>2</td> <td>4</td> </tr> <tr> <td>P4</td> <td>3</td> <td>2</td> </tr> <tr> <td>P5</td> <td>7</td> <td>5</td> </tr> </tbody> </table>	Process	Burst time	Priority	P1	12	3	P2	3	1	P3	2	4	P4	3	2	P5	7	5	M2.03	U
Process	Burst time	Priority																			
P1	12	3																			
P2	3	1																			
P3	2	4																			
P4	3	2																			
P5	7	5																			
IX	Explain the page replacement for the following replacement algorithms. Consider the following page reference string: 7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1 with 3 page frames. (a) LRU replacement (b) FIFO replacement <b>OR</b>	M3.05	U																		
X	Explain segmentation.	M3.03	U																		
XI	Explain page fault and how to handle page fault. <b>OR</b>	M3.04	U																		
XII	Explain fragmentation.	M3.03	U																		
XIII	Explain various file operations. <b>OR</b>	M4.03	R																		
XIV	Explain FCFS, SCAN disk scheduling algorithms, using the given disk queue of requests: 98,183,37,122,14,124,65,67. Assume that, the disk has 200 cylinders ranging from 0 to 199 and the current position of head is at cylinder 53. Find the total head movement.	M4.05	U																		

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