

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2026**

**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 ‘one’ mark.**

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

		<small>Module Outcome</small>	<small>Cognitive level</small>
1.	What is software?	M1.01	R
2.	An-----executes code line by line during runtime.	M1.02	R
3.	The transition from the-----state to the ready state occurs when a process is loaded into memory.	M2.02	U
4.	An edge from a process node to a resource node in resource allocation graph is known as-----	M2.04	R
5.	The mapping from a logical address to a physical address is performed by the-----.	M3.01	U
6.	Name the two types of fragmentation.	M3.04	R
7.	Dynamic binding refers to linking libraries at-----.	M3.02	U
8.	A----- is a special type of file that contains a list of other files and directories.	M4.01	U
9.	In the-----allocation method, each file has a table that keeps track of the addresses of its blocks on disk.	M4.04	R

**PART-B**

**II. Answer any ‘eight’ questions from the following. Each question carries ‘three’ marks.**

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

		<small>Module Outcome</small>	<small>Cognitive level</small>
1.	Differentiate between compiler and interpreter.	M1.02	U
2.	Write any three advantages of time sharing system.	M1.04	U
3.	Explain the four necessary conditions for the occurrence of deadlock.	M2.05	R
4.	List any six scheduling criteria used in operating systems to evaluate scheduling algorithms.	M2.03	R
5.	How does segmentation differ from paging?	M3.03	U
6.	What is thrashing in demand paging? How does it affect the performance of a computer system?	M3.05	U
7.	What are fixed and variable partitions in memory management?	M3.04	U
8.	List the different file attributes.	M4.01	R
9.	Explain two level directory structure with the help of a diagram.	M4.03	U
10.	Differentiate between SCAN and C-SCAN disk scheduling algorithm.	M4.05	U

**PART-C**

Answer 'all' questions from the following. Each question carries 'seven' marks.

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

		Module Outcome	Cognitive level																					
III.	What is an operating system? Compare multiprogramming and multiprocessing operating systems. <b>OR</b>	M1.04	U																					
IV.	Explain in detail about the various functions of operating system.	M1.03	U																					
V.	Explain process states with the help of a diagram. <b>OR</b>	M2.02	U																					
VI.	Consider the set of 6 processes whose arrival time and burst time are given below- <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Process Id</th> <th>Arrival time</th> <th>Burst time</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>0</td> <td>4</td> </tr> <tr> <td>P2</td> <td>1</td> <td>5</td> </tr> <tr> <td>P3</td> <td>2</td> <td>2</td> </tr> <tr> <td>P4</td> <td>3</td> <td>1</td> </tr> <tr> <td>P5</td> <td>4</td> <td>6</td> </tr> <tr> <td>P6</td> <td>6</td> <td>3</td> </tr> </tbody> </table> If the CPU scheduling policy is Round Robin with time quantum = 2, calculate the average waiting time and average turnaround time. Draw the GANTT chart.	Process Id	Arrival time	Burst time	P1	0	4	P2	1	5	P3	2	2	P4	3	1	P5	4	6	P6	6	3	M2.03	A
Process Id	Arrival time	Burst time																						
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P4	3	1																						
P5	4	6																						
P6	6	3																						
VII.	What are schedulers? Differentiate short term, medium term and long term schedulers. <b>OR</b>	M2.03	U																					
VIII.	Explain Resource Allocation Graph. Explain how resource allocation graph can be used in detecting the occurrence of deadlock with the help of an example.	M2.04	U																					
IX.	Briefly explain the First fit, Best Fit and Worst fit allocation strategies. <b>OR</b>	M3.04	U																					
X.	Consider six memory partitions of size 200 KB, 400 KB, 600 KB, 500 KB, 300 KB and 250 KB. These partitions need to be allocated to four processes of sizes 357 KB, 210 KB, 468 KB and 491 KB in that order. Perform the allocation of processes using First Fit Algorithm and Best Fit Algorithm.	M3.04	A																					
XI.	Write short notes on virtual memory and its benefits. <b>OR</b>	M3.03	U																					
XII.	A system uses 3 page frames for storing process pages in main memory. It uses the Optimal page replacement policy. Assume that all the page frames are initially empty. What is the total number of page faults that will occur while processing the page reference string given below- 4, 7, 6, 1, 7, 6, 1, 2, 7, 2 Also calculate the hit ratio and miss ratio.	M3.05	A																					

XIII.	Explain different file allocation methods with diagrams.	M4.04	U
<b>OR</b>			
XIV.	Explain SSTF disk scheduling algorithm.  Consider a disk queue with requests for I/O to blocks on cylinders 98, 183, 41, 122, 14, 124, 65, 67. The SSTF scheduling algorithm is used. The head is initially at cylinder number 53. There are 200 cylinders, numbered from 0 to 199. What will be the total head movement (in number of cylinders) incurred while servicing these requests?	M4.05	A

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