DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE

5132 Operating Systems

Time: 3 hours

Maximum Marks: 75

PART A

I   Answer all questions in one word or one sentence.

(9x1=9 Marks)

1	Program which acts as a interface between a user and the hardware is called -------------	M 1.02	R
2	The program and languages used by the computer are called -----------	M 1.01	R
3	A program that has been loaded and executing is called a -----------	M 2.01	R
4	In a time sharing operating system, when the time slot given to a process is completed, the process goes from the running state to ------- state	M 2.02	U
5	The processes that are residing in main memory and are ready and waiting to execute are kept on a list called the -------	M 2.03	R
6	An address generated by the CPU is commonly referred to as a ------	M 3.02	R
7	In which memory allocation strategy, a file is allocated with the smallest hole that is big enough?	M 3.04	R
8	In which type of allocation method each file occupy a set of contiguous block on the disk?	M 4.04	R
9	The interval from the time of submission of a process to the time of completion is termed as ------	M 2.03	R

PART B

II   Answer any 8 questions from the following.

(8x3=24 Marks)

1	Define Assembler. List its functions	M 1.02	R
2	Explain Compiler and interpreter and their functions	M 1.02	U
3	Explain various scheduling criteria	M 2.03	U
4	Describe the necessary conditions for deadlock	M 2.05	U
5	Illustrate FCFS scheduling algorithm with example	M 2.03	U
6	Compare different address binding schemes	M 3.02	U
7	Describe thrashing	M 3.05	U
8	Explain demand paging	M 3.05	U

9	Describe different file organizations	M 4.02	U
10	Explain indexed file organization	M 4.04	U

PART C
Answer all the questions from the following.

(6x7=42 Marks)

III	Explain the functions of Operating System	M 1.03	U
	OR		
IV	Explain multi-processing, Time sharing and real-time operating system	M 1.04	U
V	Consider the following set of processes, | Process	Burst Time	Priority
---	---	---
P1	4	3
P2	7	1
P3	10	2
P4	6	5
P5	3	4 | The processes are assumed to have arrived in the order P1, P2, P3, P4, P5, all at time 0. Draw four Gantt charts that illustrate the execution of these processes using the SJF scheduling algorithm. Calculate the waiting time of each process and average waiting time. **OR**	M 2.03	A
VI	Illustrate process control block with its structure	M 2.01	U
VII	Explain Resource Allocation Graph	M 2.04	U
	OR		
VIII	Explain Round robin Scheduling algorithm with example	M 2.03	U
IX	Explain paging and paging hardware	M 3.05	U
	OR		
X	Consider the following page reference string: 1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6 How many page faults would occur for the LRU page replacement algorithm with three frames? All frames are initially empty.	M 3.05	A
XI	Illustrate segmentation and segmentation hardware	M 3.04	U
	OR		

XII	Discuss first fit, best fit, and worst fit memory allocation strategies.	M 3.03	U
XIII	Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 2150, and the previous request was at cylinder 1805. The queue of pending requests, in FIFO order, is: 2069, 1212, 2296, 2800, 544, 1618, 356, 1523, 4965, 3681 Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests using SCAN disk-scheduling algorithms?	M 4.05	A
	OR		
XIV	Explain different directory structures	M4.03	U