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16D142

BE (CSE), BE (IT) 3rd Semester Examination

OPERATING SYSTEM

Paper–CST–205/203/263/224/ITT–205

Time allowed : 3 hours] *[Maximum marks : 60*

Note : (i) Answer six questions only.

*(ii) **Question No. 1 is compulsory.***

*(iii) Answer not more than **two** questions from each of the **Section B, C and D.***

Section–A

1. (a) List the five major categories of system calls. 2

(b) Differentiate between preemptive and non preemptive scheduling. 2

(c) Differentiate between logical and physical address space. 2

(d) What are the advantages of direct access over sequential access ? 2

(e) What do you understand by peer-to-peer networking ? 2

Section–B

2. What is an operating system ? How operating systems can be classified ? Discuss the main functions and characteristics of operating systems in detail. 10

3. Consider the following set of processes, with the length of the CPU burst given in milliseconds :

Process	Burst Time	Priority
P_1	10	3
P_2	1	1
P_3	2	3
P_4	1	4
P_5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5, all at time 0. Draw two Gantt charts that illustrate the execution of these processes using the FCFS and SJF scheduling algorithms. Find out the turnaround time and waiting time of each process for each of the scheduling algorithms. 10

4. Explain Banker's algorithm in detail with the help of an example. 10

Section–C

5. (a) Given five memory partitions of 100 KB, 500 KB, 200 KB, 300 KB, and 600 KB (in order), how would each of the first-fit, best-fit, and worst-fit algorithms place processes of 212 KB, 417 KB, 112 KB, and 426 KB (in order) ? Which algorithm makes the most efficient use of memory ? 6

(b) What is segmentation ? Discuss in brief. 4

6. What do you understand by RAID structure ? What are the advantages of RAIDs ? Explain different RAID Levels in detail. 10

7. Write notes on the following :

(a) Page Replacement Algorithms 5

(b) Free Space Management. 5

Section–D

8. (a) What do you understand by System and Network Threats ? Discuss any two. 5

(b) Differentiate between network operating systems and distributed operating systems. 5

9. (a) Discuss the strengths and weaknesses of implementing an access matrix using access lists that are associated with objects. 5

(b) What is the need-to-know principle ? Why is it important for a protection system to adhere to this principle ? 5

10. Write notes on the following :

(a) Program Threats 5

(b) Distributed Message Passing. 5