



'समानो मन्त्रः समितिः समानी'

UNIVERSITY OF NORTH BENGAL
B.Sc. Programme 5th Semester Examination, 2022

DSE1/2/3-P1-COMPUTER SCIENCE

The figures in the margin indicate full marks.

**The question paper contains DSE-1A and DSE-1B.
The candidates are required to answer any *one* from *two* courses.
Candidates should mention it clearly on the Answer Book.**

DSE-1A

DATABASE MANAGEMENT SYSTEMS

Time Allotted: 2 Hours

Full Marks: 40

GROUP-A

Answer any *five* questions

1×5 = 5

1. What do you mean by data abstraction?
2. Define 'Instance' and 'Schema'.
3. Define multivalued attribute.
4. What are the DDL commands in SQL?
5. What do you mean by candidate key?
6. What do you mean by cardinality?
7. Define trivial dependency.
8. What do you mean by normalization?

GROUP-B

Answer any *three* questions

5×3 = 15

9. Explain BCNF in DBMS.
10. Discuss Hierarchical Data Model of DBMS.
11. Discuss TCL commands with suitable examples.
12. Define primary key, super key and candidate key with example.
13. Discuss disadvantages of File processing system and how they can be overcome by DBMS.

GROUP-C

Answer any *two* questions

10×2 = 20

14. Explain a query processing system with proper diagram.
15. What are the different data anomalies and how they can be eliminated?
16. Draw an E-R diagram of a Library management system.
17. What are the different types of normalization? Differentiate BCNF and 3NF.

DSE-1B
OPERATING SYSTEMS

Time Allotted: 2 Hours

Full Marks: 60

GROUP-A

Answer any *four* questions

3×4 = 12

1. Write a short note on cache memory.
2. Define swapping. What is the necessity of swapping?
3. Explain long term scheduling.
4. What is the use of resource allocation graph?
5. Write a short note on virtual memory.
6. What are the different security features provided by an operating system?

GROUP-B

Answer any *four* questions

6×4 = 24

7. What are the different types of memory fragmentation? Explain them. How this problem can be solved?
8. Discuss SJF scheduling algorithm with proper example.
9. What is a deadlock situation? What are the necessary conditions to occur deadlock in a system?
10. SJF is a priority scheduling algorithm — Explain.
11. Explain in detail different types of operating system.
12. Discuss a multiprocessing operating system indicating its advantages and disadvantages.

GROUP-C

Answer any *two* questions

12×2 = 24

13. Discuss in detail the layered structure of an operating system.
14. Consider the following system:

<u>Process</u>	<u>Arrival Time (ms)</u>	<u>Burst Time (ms)</u>
P_1	1	6
P_2	1	5
P_3	2	5
P_4	2	3

Find Average Waiting Time and Average Turn-around Time using FCFS and SJF algorithm.

- 15.(a) Distinguish Linux based operating system and Windows based operating system. 6
- (b) Explain device management policies. 6
- 16.(a) Compare paging and segmentation. 6
- (b) What is semaphore? Why is it used in OS? Explain briefly. 6

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