



'समानो मन्त्रः समितिः समानी'

UNIVERSITY OF NORTH BENGAL
B.Sc. Programme 5th Semester Examination, 2021

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. Give different level names of data abstraction.
2. What do you mean by E-R model?
3. Write down FULL form of A, C, I, D in ACID property.
4. Write down different types of normal forms.
5. What do you mean by attribute in DBMS?
6. What do you mean by data independence?
7. What are the unary operations in Relational Algebra?
8. What are the DML commands in SQL?

GROUP-B

Answer any *three* questions

5×3 = 15

9. Explain 3rd Normal form in DBMS.
10. Define Trivial function dependency and Transitive functional dependency.
11. Explain advantages of DBMS over File Processing System.

12. Explain Generalization and Specialization in DBMS.
13. Write short note on 'Data Independence'.

GROUP-C

Answer any two questions

10×2 = 20

14. Describe DBMS three tier architecture with proper diagram. 10
15. What are the different types of database Languages? Describe with proper examples. 10
16. Describe ACID property in DBMS. 10
17. Describe different data models. 10

DSE-1B

COMPUTER SCIENCE

Time Allotted: 2 Hours

Full Marks: 60

GROUP-A

Answer any four questions

3×4 = 12

1. Explain spooling with respect to development of operating systems. 3
2. Define page fault. State any action taken to resolve it. 2+1
3. Explain kernel and shell of an operating system. 3
4. State any three services offered by an OS. 3
5. Compare time sharing and real time systems. 3
6. Write a short note on threads. 3

GROUP-B

Answer any four questions

6×4 = 24

7. Describe with the help of a suitable diagram the layer hierarchy of different types of software in relation to the hardware. 6
8. Discuss the various states of a process and their relations with the help of a suitable diagram. 6

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| 9. | Describe the different file allocation methods along with their merits and demerits. | 6 |
| 10. | What is a PCB? Explain the various components of a PCB. | 2+4 |
| 11. | Discuss with a suitable example the process of compaction to eliminate memory fragmentation. | 6 |
| 12. | Write a note on Access Matrix. | 6 |

GROUP-C

Answer any *two* questions

12×2 = 24

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| 13. | Discuss the Round Robin scheduling algorithm with the help of a suitable example and Gantt Chart. Explain with examples the effect of quantum size on the performance of RR scheduling. | 7+5 |
| 14.(a) | Define deadlock among a set of processes. Explain the necessary conditions for deadlock to occur. | 2+8 |
| (b) | What do you mean by deadlock prevention? | 2 |
| 15.(a) | Discuss paging address translation using direct mapping with the help of a suitable diagram. | 7 |
| (b) | Compare paging and segmentation. | 5 |
| 16.(a) | Discuss semaphores and discuss their use in solving mutual exclusion problem. | 2+6 |
| (b) | Explain the various types of operating systems with suitable examples. | 4 |

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