'समानो मन्त्रः समितिः समानी'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 3rd Semester Examination, 2021

GE2-P1-COMPUTER SCIENCE

Time Allotted: 2 Hours | Full Marks: 60

The figures in the margin indicate full marks.

The question paper contains GE3A and GE3B.
The candidates are required to answer any *one* from *two* courses.
Candidates should mention it clearly on the Answer Book.

GE3A

OPERATING SYSTEMS

GROUP-A

Answer any *four* questions from the following 3×4 = 12

1. Why is operating system important?

2. What is the main purpose of an OS? What are the different types of OS?

3. What do you mean by process synchronization?

4. What is the difference between main memory and secondary memory?

5. What is a process? What are the different states of a process?

6. What is thrashing in OS?

GROUP-B

Answer any *four* questions from the following 6×4 = 24

7. What do you mean by paging? What is the difference between paging and segmentation?

8. What is a deadlock in OS? Explain with an example. What are the necessary conditions for a deadlock?

9. What is kernel and write its main functions?

10. Give the differences between multitasking and multiprocessing OS. What is the main objective of multiprogramming?

11. What is scheduling algorithm? Explain briefly FCFS and RR scheduling algorithms.

12. What is thread in OS? Give the differences between process and thread.

GROUP-C

Answer any *two* questions from the following 12×2 = 24

13. Explain any two page replacement algorithms with examples.

14. What is disk scheduling? Discuss SCAN and C-SCAN disk scheduling algorithms.

15. Write the banker's algorithm to avoid deadlock. Explain with an example.

16. Write a note on virtual memory.

GE3B

DATABASE MANAGEMENT SYSTEM

GROUP-A

Answer any *four* questions from the following 3×4 = 12

1. Discuss hierarchical data model.

2. Explain 3rd Normal Form with an example.

3. What is database integrity?

4. Describe degree of a relationship with a suitable example.

5. Explain select and project operations of relational algebra.

6. Define entity set.

GROUP-B

Answer any *four* questions from the following 6×4 = 24

7. What do you mean by logical and physical data independence?

8. Explain different keys available in DBMS.

9. Define ACID properties of a concurrent DBMS.

10. Discuss the different disadvantages of a File Oriented Systems over DBMS.

11. Explain the 3-layered architecture of a database.

12. List the different responsibilities of a DBA.

GROUP-C

Answer any *two* questions from the following 12×2 = 24

13. Explain Hashed File Organisation in detail.

14. Explain all three types of Outer Joins in DBMS.

15. Design on E-R diagram for an ‘Online ticket booking’ system.

16. Discuss multilevel indexing using B and B+ trees.

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