ED-764

M.A./M.Sc. 4th Semester
Examination, May-June 2021

MATHEMATICS

Optional (A)

Paper - III

Operating System and
Database Management System

Time : Three Hours] [*Maximum Marks* : 70

Note : Answer any **two** parts from each question. All questions carry equal marks. Assume any missing information.

Unit-I

1. (*a*) Define database system and briefly explain different types of DBMS users.

(*b*) Illustrate the need for a database system, giving suitable example and also discuss different views of data with necessary diagram.

(*c*) Explain various types of data model with example.

Unit-II

2. (*a*) Differentiate between Cartesian product and natural join operations used in relational algebra with suitable example.

(*b*) What are the pitfalls in relational database design ? With a suitable example, also explain the role of functional dependency.

(*c*) Differentiate between tuple relational calculus and Domain relational calculus.

Unit-III

3. (*a*) What is meant by integrity constraint ? Write about complex integrity constraints in SQL and explain.

(*b*) Explain the strength and weakness of the Triggers mechanism and update views in stored procedure.

(*c*) Discuss Join dependencies and Fifth Normal Form and explain why is 5NF also called PJNF ?

Unit-IV

4. (*a*) Define Operating System and discuss its role from different perspectives.

(*b*) Explain implementation of file mapping in the context of memory management.

(*c*) Discuss process management in operating systems.

Unit-V

5. (*a*) Discuss device independent I/O with example.

(*b*) Explain polling and interrupt mode to monitor I/O interface.

(*c*) Discuss the concept of multilevel security and concurrency control for distributed computer systems.

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