Roll No……..….. **Total No. of Printed Pages: [01]**
Total No. of Questions: [11]

M.Sc. (Mathematics) (Semester – 4th)
DATABASE MANAGEMENT SYSTEMS
Subject Code: MCSE0-F99
Paper ID: [OE2220506]

Time: 03 Hours **Maximum Marks: 60**

Instruction for candidates:

1. Section A is compulsory. It carries 16 marks. It consists of 4 questions of 4 marks each.
2. Section B consist of 4 questions of 8 marks each. The student has to attempt any 3 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A **(4 marks each)**

Q1. Explain the concept of Data independence?

Q2. What are the Integrity Constraints in a relational database?

Q3. Explain the first three normal forms?

Q4. What is the meaning and purpose of digital signatures?

Section – B **(8 marks each)**

Q5. How is a File Systems different from a DBMS? How is a DBMS better?

Q6. Write basic SQL queries for Creating, inserting data, updating, and deleting a table?

Q7. Explain the following two problems with the help of examples: Lost Update Problem, Inconsistent Read Problem

Q8. Explain the role of indexing in File Organization?

Section – C **(10 marks each)**

Q9. Explain the following: Relational Model, Relational Algebra, and Relational Calculus?

Q10. What is a deadlock? How is a deadlock handled in a concurrent system?

Q11. How is the Access Control Mechanism used for database protection?