Roll No……..….. **Total No. of Printed Pages: [1]**

Total No. of Questions: [09]

B. Tech. (ECE) (Semester - 5th)
DATABASE MANAGEMENT SYSTEMS
Subject Code: BCSEO1003
Paper ID: [18OE111309]

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

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 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 **(2 marks each)**

Q1. Attempt the following:

a) Write the advantages of DBMS?
b) Define the concept of database system?
c) Define two-phase locking?
d) Define normalization and list the various types of normal forms?
e) Differentiate query processing and optimization?
f) What do you understand by database language?
g) What is database integrity?
h) What do you understand by data independence?
i) Explain concurrency?
j) Differentiate Authentication and Authorization?

Section – B **(5 marks each)**

Q2. What do you mean by a join in DBMS? Explain its need with the help of an example?
Q3. Explain Data independence? Discuss the types of Data Independence?
Q4. Discuss the data modeling concepts in detail?
Q5. Explain in detail the working of SQL injection?
Q6. Explain ACID properties and Serializability of scheduling?

Section – C **(10 marks each)**

Q7. Explain relational algebra? Discuss about different operators used in algebra. Differentiate the relational algebra and calculus?
Q8. Why we need concurrent execution of transactions? Explain lock-based concurrency control in detail?
Q9. Discuss database recovery in DBMS? Explain log based recovery, and shadow page recovery in detail?