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Total No. of Printed Pages: 2

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B.SC. IT (Semester: 4th)
DATABASE MANAGEMENT SYSTEMS I
Subject Code: BCSE0F95
Paper ID: [OE2130424]

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. Discuss Grant and Revoke commands with respect to Database protection.
- b. Differentiate between relational calculus and relational algebra.
- c. Discuss an Entity in context of Entity Relationship model.
- d. What do you mean by a Functional Dependency?
- e. Describe Serializability.
- f. What is a primary index?
- g. Define Primary Key with example
- h. Discuss data independence.
- i. What do you mean by an integrity constraint?
- j. Describe locks in Database Management System (DBMS).

Section – B

(5 marks each)

- Q2. What do you mean by ACID properties of DBMS transactions? Discuss Two-phase Commit Protocol in detail.
- Q3. What is a Data Model? Differentiate between Relational Model, Network Model, and Hierarchical Model.
- Q4. Explain 3-schema architecture of DBMS with diagram along with mappings.
- Q5. What do you mean by Access Control Mechanisms in a DBMS? Discuss Discretionary Access Control mechanism in detail.
- Q6. Discuss the advantages and disadvantages of database management system over traditional file system.

Section – C

(10 marks each)

- Q7. What is Normalization? Discuss first four forms of normalization with example.

Q8. Write a short note on:

- a) File Organization
- b) Lost Update Problem
- c) Relational Calculus

Q9. Consider the following database schema:

HOTEL (hotelNo, name, city)

ROOM (roomNo, hotelNo,type, price)

BOOKING(hotelNo,guestNo, roomNo, dateFrom, dateTo,)

GUEST(guestNo, name, city)

Give SQL statements for the following queries:

- a) Create the table HOTEL.
- b) Insert one row of data in BOOKING table taking suitable datatypes.
- c) Update the name of Guest No. 1 to “Bhagwant Mann”.
- d) List the bookings made between 31st August 2022 and 7th November 2022.
- e) Give the names of all guests staying in hotel ‘HYATT’.