Printed Pages:02 **Sub Code:KCA204**

Paper Id: 238384 **Roll No.** | | | | | | | | | | |

MCA

(SEM II) THEORY EXAMINATION 2022-23

DATABASE MANAGEMENT SYSTEMS

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

(a) Define the terms Data and Database.
(b) Discuss various advantages of DBMS?
(c) Define cursor in PL/SQL.
(d) What do you mean by sub-queries?
(e) Why normalization is used?
(f) What is pseudo-transitivity?
(g) Define serializable schedule.
(h) What do you mean by transaction failure?
(i) Define concurrent processing in database.
(j) What do you mean by dispatcher in terms of Oracle?

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

(a) Discuss ANSI/SPARC architecture in detail.
(b) Create a table Employee(Emp_id, Emp_name, Emp_add, Emp_basicpay) and insert some records in it. Create another table Emp_detail(Emp_name, Emp_add) from Employee table by using SELECT statement.
(c) Explain basic inference rules applied on the set of functional dependencies. Suppose R with attributes A, B, C, D, E, F have the FDs A→BC, B→E, CD→EF. Prove that FD : AD→F also holds in R.
(d) Write short note on Testing of serializability.
(e) What are various types of Locks applied on data items? Discuss Two-phase locking protocol and Strict Two-phase locking protocols.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a) Discuss various types of Entity, Attribute and Relation used in designing an ER-diagram.
(b) What are various types of databases? Discuss them.

4. Attempt any *one* part of the following: 10 x 1 = 10

(a) Create the tables Supplier(SNo, SName, City), Parts(PNo, Pname, Color, City), and Shipment(SNo, PNo, Quantity). Answer the following queries :

(i) Get the total number of suppliers.
(ii) Get the total number of suppliers currently supplying parts.
(iii) Get part numbers of all parts supplied.
(iv) Change the color of parts from red to black.

(b) Discuss Primary Key, Unique Key, Candidate Key and Foreign Key by taking examples.

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5. Attempt any *one* part of the following: 10 x 1 = 10

(a) Given a relation R(P, Q, R, S, T) and Functional Dependency set FD = { PQ → R, S → T }, determine whether the given R is in 2NF? If not convert it into 2 NF.

(b) How will you check that the decomposition of a relation on a given set of functional dependencies is dependency preserving? Discuss with the help of an example.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain ACID properties of a transaction in detail.

(b) Write short note on Log-Based Recovery.

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) What is Timestamp Ordering Protocol? Discuss working of Basic Timestamp ordering protocol along with advantages and disadvantages of it.

(b) Write short note on Multiple Granularity.

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