S-741 Roll No. …………………..

MCA–13/M.Sc.(IT)–14

Advanced Database Management System

Master of Computer Applications/Master of

Science in Information Technology

(MCA/M.Sc.IT-11/12/16/17)

Fourth Semester, Examination, 2018

Time : 3 Hours **Max. Marks : 80**

Note : This paper is of **eighty (80)** marks containing **three (03)** Sections A, B and C. Learners are required to attempt the questions contained in these Sections according to the detailed instructions given therein.

Section–A

(Long Answer Type Questions)

Note : Section 'A' contains four (04) long answer type questions of nineteen (19) marks each. Learners are required to answer *two* (02) questions only.

1. Why normalization process is necessary for a good database design ? Discuss in detail the Boyce-Codd Normal Form with suitable example.

2. What are the steps involved in query processing ? Explain how queries are optimized with an example.

3. Explain Relational Data Model with its features and Relational Constraints.

A-59 **P. T. O.**

4. What is meant by database security ? Discuss the various security issues in detail.

Section–B

(Short Answer Type Questions)

Note : Section 'B' contains eight (08) short answer type questions of eight (08) marks each. Learners are required to answer *four* (04) questions only.

1. Explain E-R Model.
2. Write a note on functional dependency with examples.
3. Write SQL syntax for the following :
   (a) INSERT
   (b) CREATE TABLE
   (c) DELETE
   (d) SELECT
4. Describe Normalization and its need.
5. What are the desirable properties of transaction ?
6. Define security issues and role of Encryption in ensuring security.
7. What are Relational Constraints ?
8. Diagrammatically discuss Architecture of DBMS.

Section–C

(Objective Type Questions)

Note : Section 'C' contains ten (10) objective type questions of one (01) mark each. All the questions of this Section are compulsory.

1. Relational Algebra is a _____ query language.
   (a) Relational
   (b) Structural
   (c) Procedural
   (d) Fundamental

2. 'AS' clause used in SQL for :

   (a) Selection operation

   (b) Rename operation

   (c) Join operation

   (d) Projection operation

3. The database schema is written in :

   (a) HLL

   (b) DML

   (c) DDL

   (d) DCL

4. In any relation if every non-key attribute is functionally dependent on the primary key, then the relation will be in :

   (a) 1NF

   (b) 2NF

   (c) 3NF

   (d) BCNF

5. We got the decomposition of R into R_1 (P, Q) and R_2 (R, S) from schema R (P, Q, R, S) consisting the following functional dependencies $P \rightarrow Q$ and $R \rightarrow S$, then decomposition is :

   (a) dependency preserving and lossless join

   (b) Lossless join but not dependency preserving

   (c) Dependency preserving but not lossless join

   (d) Not dependency preserving and not lossless join

A-59 **P. T. O.**

6. A _____ is a special kind of a store procedure that executes in response to certain action on the table like insertion, deletion or updation of data.

    (a) Procedures

    (b) Triggers

    (c) Functions

    (d) None of the mentioned

7. A transaction completes its execution is said to be :

    (a) Committed

    (b) Aborted

    (c) Rolled back

    (d) Failed

8. Domain constraints, functional dependency and referential integrity are special forms of :

    (a) Foreign key

    (b) Primary key

    (c) Assertion

    (d) Referential constraint

9. ODBC stands for :

    (a) Object Database Connectivity

    (b) Oral Database Connectivity

    (c) Oracle Database Connectivity

    (d) Open Database Connectivity

10. For a weak entity set to be meaningful, it must be associated with another entity set, called the :

    (a) Identifying set

    (b) Owner set

    (c) Neighbour set

    (d) Strong entity set