## Fifth Semester B. E. (C.T.) (C.B.S.) Examination

# DATA BASE MANAGEMENT SYSTEM

Time : Three Hours ]　　　　　　　　　　[ Max. Marks : 80

N. B. : (1) All questions carry marks as indicated.
  (2) Solve Six questions as follows :
    Que.No 1 OR Que.No 2
    Que.No 3 OR Que No 4
    Que.No 5 OR Que.No 6
    Que.No 7 OR Que.No 8
    Que.No 9 OR Que.No 10
    Que.No 11 OR Que.No.12
  (3) Due credit will be given to neatness and adequate dimensions.
  (4) Illustrate the answers with necessary figures/ drawings wherever necessary.
  (5) Assume suitable data wherever necessary.

1. (a) Difference between DBMS and file processing system.　　6

   (b) Explain architecture of DBMS.　　7

### OR

2. (a) Describe the term Relation and Relation Schema.　　4

   (b) Explain the architecture of IMS.　　5

   (c) Explain :—

     (i) Network model.

     (ii) Hierarchical model.　　4

3. (a) Draw an ER-diagram for banking system. Also show strong and weak entity in diagram.  7

   (b) Define :—

   (i) Entity and Entity Set.

   (ii) Strong entity set.

   (iii) Weak entity set.

   (iv) Specialization.

   (v) Generalization.  7

## OR.

4. (a) Explain Tuple Relational Calculus and Domain Relational Calculus.  6

   (b) Explain :—

   (i) Primary Key.

   (ii) Candidate Key.

   (iii) Foreign Key.

   (iv) Super key.  8

5. (a) Define Normalization? Also explain BCNF and 3NF with example.  7

   (b) Define and give example for :—

   (i) Functional Dependency.

   (ii) Fully Dependency.

   (iii) Trivial Dependency.  6

**OR**

6. (a) Explain the working of trigger and Assertion. 7

   (b) Explain :—

       (i) B-tree.

       (ii) Hash index.

       (iii) Bitmap index. 6

7. (a) What are the steps involved in Query Processing ? 7

   (b) How to measure Query Cost ? 6

**OR**

8. (a) Explain materialization and pipelining. 7

   (b) Explain transformation of relational expression. 6

9. (a) What is transaction ? Explain property of transition in detail. 7

   (b) Explain two phase commit protocol. 6

**OR**

10. Explain :—

    (i) Two phase locking protocol. 4

    (ii) Serializability. 3

    (iii) Deadlocks. 3

    (iv) System Recovery. 3

11. (a) Explain Log based Recovery. 6

(b) Explain checkpoints and buffer management. 8

**OR**

12. (a) Explain various SQL database. 8

(b) Explain various recovery techniques in DBMS. 6

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