# 2011

## PGDCA

Paper : 2.2

**( Database Management System )**

*Full Marks* : 100

*Time* : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Choose the correct answer from the following : 1×10=10

   *(a)* Which of the following has something to do with information?

      *(i)* Communication

      *(ii)* Decision-making

      *(iii)* Data

      *(iv)* All of the above

   *(b)* What are the key attributes of information?

      *(i)* Accuracy

      *(ii)* Timeliness

      *(iii)* Relevancy

      *(iv)* All of the above

            *( Turn Over )*

(c) The logical architecture of a DBMS is known as

  (i) four-level architecture

  (ii) three-level architecture

  (iii) five-level architecture

  (iv) two-level architecture

(d) What is the name of the system database that contains descriptions of the data about database?

  (i) Metadata

  (ii) Data dictionary

  (iii) Table

  (iv) None of the above

(e) DDL stands for

  (i) data definition language

  (ii) database definition language

  (iii) database application

  (iv) None of the above

(f) What is a relationship called when an association is maintained between two entities?

  (i) Unary

  (ii) Binary

  (iii) Ternary

  (iv) None of the above

( *Continued* )

*(g)* Binary, unary and ternary are the three categories of

  *(i)* attribute

  *(ii)* cardinality ratio

  *(iii)* entity

  *(iv)* relationship

*(h)* Who developed the ER model?

  *(i)* Codd

  *(ii)* Date

  *(iii)* Chen

  *(iv)* Bachman

*(i)* What is the cardinality of a table with 1000 rows and 10 columns?

  *(i)* 10

  *(ii)* 100

  *(iii)* 1000

  *(iv)* None of the above

*(j)* Integrity rule 2 is related to

  *(i)* alternate key

  *(ii)* primary key

  *(iii)* candidate key

  *(iv)* foreign key

*( Turn Over )*

**( 4 )**

2. Fill in the blanks :         1×10=10

   *(a)* In data processing, the term 'data item' is called ——.

   *(b)* The centralization of all the enterprise information in the database makes the database an —— resource for an organization.

   *(c)* Various functions of the database management system serve as essential —— in database management processing.

   *(d)* —— is the lowest level of abstraction seen by a user.

   *(e)* —— is represented by a table in relational model.

   *(f)* MySQL is an example of ——.

   *(g)* An association between two entities is represented by ——.

   *(h)* A database is a set of information that is ——.

   *(i)* —— key of a table never contains null and duplicate values.

   *(j)* Ease of use is an —— of SQL.

**3.** Match *Column—A* with *Column—B* :    1×10=10

| | *Column—A* | | *Column—B* |
|---|---|---|---|
| *(a)* | Rows in a relation | *(i)* | RDBMS |
| *(b)* | DML | *(ii)* | Internal level |
| *(c)* | Entity integrity | *(iii)* | 4NF |
| *(d)* | One value for each of the columns in a table | *(iv)* | 1NF |
| | | *(v)* | No. of attributes in a relation |
| | | *(vi)* | No. of rows in a table |
| *(e)* | MVD | *(vii)* | Pattern matching in SQL |
| *(f)* | ORACLE | *(viii)* | File |
| *(g)* | LIKE | *(ix)* | Primary key |
| *(h)* | Degree | *(x)* | Relational algebraic operations |
| *(i)* | Cardinality | *(xi)* | Data manipulation language |
| *(j)* | UNION, DIFFERENCE | *(xii)* | Entity instance |

**4.** State whether the following sentences are True or False :    1×10=10

*(a)* The . structural component is not concerned with how data is represented.

*(b)* The manipulative component is concerned with how data is operated upon.

*(c)* An entity is represented by a table in relational model.

*(d)* A relation with degree one is unary.

*(e)* Record is the smallest unit of data in the relational model.

(f) A join of a table to itself is known as outer join.

(g) Equijoin is a join in which the joint condition contains equality operator.

(h) Relational model of a database is based on set theory of mathematics.

(i) In relational algebra, symbols are used to denote operations.

(j) MySQL is not an RDBMS.

5. Consider a relation 'book', whose fields are book_no, book_name, author, publisher, price. Now write SQL statements to do the following :                                3×5=15

(a) Display all the records in the relation with all the fields.

(b) Display the book records written by 'Kanetkar'.

(c) Update the book price of the book whose name is 'Programming in C'.

(d) Delete the book records for those books published by 'BPP'.

(e) Add a new field as 'copies' for storing total no. of copies.

a11—300/688                                    ( Continued )

**6.** Give answers to any *five* of the following questions : 5×5=25

    *(a)* What is a data model? What are different types of data model?

    *(b)* Describe different types of database relationship.

    *(c)* Define the following terms :

        Entity; Primary key; Foreign key; Functional dependency; MVD

    *(d)* What is data independence? How is logical data independence different from physical data independence?

    *(e)* What are the advantages and disadvantages of the relational data model?

    *(f)* Explain the relational data model.

    *(g)* What is relational algebra? Write down the six primitive operators in relational algebra with associated symbols.

**7.** Discuss the physical DBMS structure.    10

8. Consider the following relation :                    10

Student   (Student_Id;   Student_Name;
Address; Date_of_Admission; Course_Id;
Course_Name; Duration; Fee; No_of_
Papers)

The functional dependencies are given
as :

Student_Id → Student_Name

Student_Id → Address

Student_Id → Course_Id

Student_Id → Date_of_Admission

Course_Id → Course_Name

Course_Id → Duration

Course_Id → Fee

Course_Id → No_of_Papers

Normalize the above relation up to
Boyce–Codd normal form(BCNF)
relations.

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