2014

(4th Semester)

COMPUTER SCIENCE

Paper No. : COMP–401

(Database Management System)

(Theory)

Full Marks : 70   *Pass Marks* : 45%

Time : 3 hours

(PART : B—DESCRIPTIVE)

(Marks : 45)

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

1. What is a database? Explain different characteristics of DBMS. Why do we use database?   1+4+4=9

Or

Explain DBMS architecture with diagram. What do you understand by instances?   6+3=9

2. What are the various symbols used to draw an *E-R* diagram? Explain an *E-R* diagram for College Management System. What is the difference between DBMS and RDBMS?

$3+4+2=9$

Or

Explain the concept of a data model. Explain various data models used in DBMS. $3+6=9$

3. Explain 1NF, 2NF and 3NF. What is the motivation for putting a relation in BCNF? What is functional dependencies in normalization? $6+2+1=9$

Or

Explain with suitable examples the relational algebra operators of—

(a) theta join;

(b) equi join;

(c) natural join;

(d) selection;

(e) projection;

(f) intersection;

(g) Cartesian product;

(h) union;

(i) minus. $1×9=9$

4. What is SQL? What are the characteristics of SQL? Explain DDL and DML statement.

$1+4+4=9$

Or

What is constraint? Explain the following commands with examples : $1+2+2+2+2=9$

(a) Select

(b) Create

(c) Delete

(d) Update

5. What is PL/SQL? What are the advantages of PL/SQL? Explain triggers in PL/SQL. $2+4+3=9$

Or

What is cursor? Explain various types of cursors. Explain the PL/SQL architecture with a diagram. $1+3+5=9$

★★★

2 0 1 4

(4th Semester)

COMPUTER SCIENCE

Paper No. : COMP–401

(Database Management System)

(Theory)

(PART : A—OBJECTIVE)

(*Marks* : 25)

The figures in the margin indicate full marks for the questions

1. Put a Tick (✓) mark against the correct answer in the brackets provided :　　　1×10=10

 (a) Which of the following commands is used to avoid duplication while selecting?

 (i) Alter 　　(　)

 (ii) Unique 　(　)

 (iii) Distinct 　(✓)

 (iv) Only 　(　)

(b) Which of the following is not a database object?

(i) Tables ( )

(ii) Indexes ( )

(iii) View ( )

(iv) None of the above (✓)

(c) The relationship between data is defined in the

(i) physical level ( )

(ii) view level ( )

(iii) logical level (✓)

(iv) None of the above ( )

(d) Which of the following data model conceptualizes the data stored in the tables?

(i) Relational (✓)

(ii) Hierarchical ( )

(iii) Network ( )

(iv) None of the above ( )

(e) The security features of the database are set up by the

(i) online users ( )

(ii) database administrator (✓)

(iii) naive users ( )

(iv) application programmer ( )

(f) Select operator is denoted by

(i) Ω ( )

(ii) π ( )

(iii) sigma (✓)

(iv) X ( )

(g) —— keyword specifies the condition on which tables are to be joined and how to join them.

(i) From ( )

(ii) On ( )

(iii) Join (✓)

(iv) Select ( )

(h) The number of attributes in a relation refers to

    (i)   degree of a relation   (✓)

    (ii) relationship set   ( )

    (iii) relationship type   ( )

    (iv) None of the above   ( )

(i) SQL is a/an —— language.

    (i)   non-procedural   ( )

    (ii) object-oriented   ( )

    (iii) procedural   (✓)

    (iv) None of the above   ( )

(j) For a relation schema to be in BCNF, it required to be in

    (i)   1NF   ( )

    (ii) 2NF   ( )

    (iii) 3NF   (✓)

    (iv) 4NF   ( )

2. Write (*T*) for *True* or (*F*) for *False* against each of the following statements in the brackets provided : 1×5=5

(a) A foreign key is a field whose values identify one and only one record in the same file.

(b) Entity is a logical concept of virtual world.   (F)

(c) A field is a collection of records arranged in a predefined format.   (T)

(d) A weak entity has only one key attribute.   (F)

(e) Projection enables the selection of specific tuples from a relation.   (F)

3. Answer any *five* of the following in short : 2×5=10

(a) What is query? Explain with example.

(b) What is relational algebra?

(c)   What do you understand by the term 'degree'?

(d)   What is date function?

(e) What are stored procedures?

(f) What is weak entity set?

(g) What is the difference between triggers and procedures?

(h) Explain product Cartesian.

★ ★ ★