2017

(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 the purpose of database management system? Explain in detail about typical DBMS components with neat diagram. 4+5=9

Or

What is the difference between logical and physical data independences? What are the functions of database administrator? Explain data dictionary and database user. 2+4+3=9

2. Discuss various components of E-R model. Explain the stepwise procedure of how you develop an E-R diagram using an example of tiny college. 4+5=9

Or

What is entity? Explain different data models based on degree of abstraction. Also, explain Codd's rules with examples. 1+5+3=9

3. What is the purpose of normalization? What are the various types of normal forms used in relational database? Why is 4NF in normal form more desirable than BNCF? 2+5+2=9

Or

What is functional dependency? Explain different types of operators of relational algebra in DBMS. Explain different types of joins with suitable examples. 2+4+3=9

4. Discuss about aggregate functions in SQL with example. Write the syntax for creating a table. Give a brief description on DML command. 4+2+3=9

Or

State the advantages of SQL. Explain the following in SQL with examples : 3+2+2+2=9

(a) Select clause

(b) Insert into clause

(c) Constraints

5. What is the purpose of PL/SQL language? Explain different types of cursor. How can you access the cursor in PL/SQL program? 2+4+3=9

Or

Explain stored procedures with suitable examples. What are PL/SQL stored functions? How are they created? What is trigger? 3+2+2+2=9

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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) The view of total database content is

(i) conceptual view ( )

(ii) internal view ( )

(iii) external view ( )

(iv) physical view ( )

(b) Cartesian product in relational algebra is

(i) unary operator ( )

(ii) binary operator ( )

(iii) ternary operator ( )

(iv) not defined ( )

(c) In a relational model, relations are termed as

(i) tuples ( )

(ii) attributes ( )

(iii) tables ( )

(iv) rows ( )

(d) The full form of DDL is

(i) Dynamic Data Language ( )

(ii) Detailed Data Language ( )

(iii) Data Definition Language ( )

(iv) None of the above ( )

(e) In an E-R diagram, attributes are represented by

(i) rectangle ( )

(ii) square ( )

(iii) ellipse ( )

(iv) triangle ( )

(f) Related files in a database are grouped to form a

(i) data file ( )

(ii) data record ( )

(iii) menu ( )

(iv) bank ( )

(g) A relational database developer refers to a record as

(i) a criteria ( )

(ii) a relation ( )

(iii) a tuple ( )

(iv) an attribute ( )

(h) Which of the following is an advantage of the database management approach?

(i) Data is dependent on programs ( )

(ii) Data redundancy increases ( )

(iii) Data is integrated and can be accessed by multiple programs ( )

(iv) None of the above ( )

(i) E-R model uses symbol to represent weak entity set?

(i) Dotted rectangle ( )

(ii) Diamond ( )

(iii) Doubly outlined rectangle ( )

(iv) None of the above ( )

(j) Which of the following are the properties of entities?

(i) Groups ( )

(ii) Tables ( )

(iii) Attributes ( )

(iv) None of the above ( )

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

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

( )

(b) Stored procedures are programs embedded within a table that are automatically invoked by updates to another table.

( )

(c) A good data model is simple.

( )

(d) The physical and relational database implementation of the data model is known as the scenario.

( )

(e) Triggers are programs embedded within a table that can be called from an application program.

( )

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

(a) What is relationship?

(b) What is the difference between static and dynamic SQLs?

(c) What is the degree of a relationship?

(d) What is subquery? Give an example.

(e) What is information system?

(f) What is meant by relational algebra?

(g) What are keys? Mention the types of keys.

(h) What are the goals of database architecture?

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