**2016**

( 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 DBMS? List two DBMS softwares. What are the characteristics of DBMS? List the applications of DBMS. 1+2+3+3=9

*Or*

Define database instance, schema and database state. Explain in detail the three levels of DBMS architecture. 3+6=9

2. What do you mean by degree of a relation and domain of a relation? What is a data model? List and explain three data models. 2+1+6=9

*Or*

Define cardinality. Differentiate between one-to-many and many-to-one cardinality. Explain the E-R model with an example. 1+2+6=9

3. Define functional dependencies. Differentiate between full and partial functional dependencies. Explain equi-join and outer join with examples. 2+2+5=9

*Or*

What is normalization? Explain 1NF, 2NF, 3NF and BCNF with their anomalies. 1+8=9

4. What is a subquery? Write short notes on any two DML commands with example. Explain the following functions : 1+5+3=9

*(a)* UPPER

*(b)* TRIM

*(c)* ROUND





*Or*

What are DDL and DML commands in SQL? Explain aggregate function with example. Write query for the following based on the below table STUDENT :

| Sl.no | Sname | Gender | Course | Marks |
|---|---|---|---|---|
| 1 | Frank | Male | B.Sc | 87 |
| 3 | Andy | Male | B.Sc | 74 |
| 4 | Kelly | Female | B.A | 69 |
| 5 | Mark | Male | B.A | 76 |
| 7 | Jewel | Female | B.Sc | 81 |

*(a)* Create the table with appropriate attributes.

*(b)* List all students' details whose names contain letter 'e'.

*(c)* List the male students who have taken B.Sc course.

*(d)* List the students name that got the highest mark. 2+3+4=9

5. Explain the block structure of PL/SQL. List the advantages of PL/SQL. Explain PL/SQL functions with an example. 3+3+3=9

*Or*

What are triggers? Give their advantages. Write a program to calculate the simple interest. 2+3+4=9

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**2016**

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Paper No. : COMP–401

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( 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 schema which describes where the data are stored is

*(i)* conceptual schema ( )

*(ii)* internal schema ( )

*(iii)* external schema ( )

*(iv)* physical schema ( )

(b) The Cartesian product in relational algebra is

(i) unary operator ( )

(ii) binary operator ( )

(iii) ternary operator ( )

(iv) not defined ( )

(c) In PL/SQL structure, which of the following sections is optional?

(i) EXECUTABLE section ( )

(ii) END section ( )

(iii) EXCEPTION section ( )

(iv) None of the above ( )

(d) Which of the following is responsible for defining the content, structure constraints and functions of a database system?

(i) Database administrator ( )

(ii) Database user ( )

(iii) Database designer ( )

(iv) Network administrator ( )



(e) An entity set that does not have sufficient attributes to form a primary key is

(i) strong entity set ( )

(ii) weak entity set ( )

(iii) simple entity set ( )

(iv) primary entity set ( )

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

(i) rectangle ( )

(ii) ellipse ( )

(iii) square ( )

(iv) triangle ( )

(g) The language used in application programs to request data from the DBMS is referred to as the

(i) DML ( )

(ii) DDL ( )

(iii) VDL ( )

(iv) SDL ( )

*(h)* The column header is referred to as

*(i)* table ( )

*(ii)* relation ( )

*(iii)* attribute ( )

*(iv)* domain ( )

*(i)* Which key is used to represent the relationship between tables?

*(i)* Primary key ( )

*(ii)* Foreign key ( )

*(iii)* Super key ( )

*(iv)* None of the above ( )

*(j)* The statement in SQL which allows to change the definition of a table is

*(i)* alter ( )

*(ii)* update ( )

*(iii)* create ( )

*(iv)* select ( )



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

*(a)* Internal level is the lowest level of abstraction.

( )

*(b)* Weak entity set is dependent on another entity.

( )

*(c)* Normalization enhances the need to recognize data when it is modified.

( )

*(d)* DELETE command is used to delete an attribute in a table.

( )

*(e)* In PL/SQL procedure, IN is the default parameter.

( )

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

*(a)* What are data? List two advantages of DBMS.



*(b)* Differentiate between primary key and foreign key.

(c) What are the purposes of normalization?



(d) What is DCL? Write a short note on any one DCL command.

(e) Write a short note on stored procedures in PL/SQL.



(f) Explain with an example to add a constraint to an existing relation.

(g) List four properties of RDBMS.



(h) What is a relational algebra? List the basic operations in relational algebra.

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