Roll No. .....

97671

BCA 3rd Semester (New) Examination – November, 2018

INTRODUCTION TO DATABASE SYSTEM

Paper : BCA-203

Time : Three Hours] *[Maximum Marks : 80*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all. Question No. **1** is ***compulsory*** and attempt ***four*** more questions by selecting ***one*** question from each Unit. All questions carry equal marks.

1. Answer the following questions :

(a) What do you mean by data redundancy ?

(b) Define the term catalog and metadata in DBMS.

(c) What is an instance ?

(d) What do you mean by database schema ?

(e) Define data integrity.

(f) Name any ***two*** popular relation database management softwares.

(g) Explain concurrency in database system.

(h) What is the need of database security ?

UNIT – I

2. (a) Discuss the main characteristics of the database approach. How it differs from traditional file system.

   (b) What are the different types of database users who interact with the database system ? Explain each in brief.

3. What do you mean by DBMS ? Explain the various functional components of DBMS with the help of suitable diagram. Also discuss the advantages and disadvantages of DBMS.

UNIT – II

4. What do you mean by data independence ? Why it is important to maintain data independence in a database ? Explain with the help of example the differences between logical and physical data independence.

5. Explain the client server architecture of database management system. Also write its advantages and disadvantages.

UNIT – III

6. (a) Define entity, entity type, entity set and attribute with the help of example.

   (b) What is mapping cardinalities ? Explain various types of mapping cardinalities.

7. (a) Design an E-R diagram for Educational Institute System. Make your own assumptions about the system.

(b) Define the term data model ? Explain different types of data models.

UNIT – IV

8. What is the need of normalization ? Define and discuss 1NF, 2NF, 3NF and BCNF by giving suitable example for each.

9. What is SQL ? What are the major components of SQL ? Write syntax for creating a table, inserting values in the table, updating values in the table and selecting fields. Use suitable example for each.

UNIT – IV

8. Differentiate tuple and domain relational calculus. What is meant by safe expression in relational calculus? Give an example ?

9. What is query optimization? Discuss the significance and different steps followed during query optimization.

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1. ***Compulsory question :***

(a) Differentiate file system and DBMS.

(b) Name the ***five*** components of DBMS environment and how they relate to each other ?

(c) What is mapping? Why it is necessary in DBMS architecture ?

(d) Differentiate record-based and object-based data models.

(e) What is the degree of relationship ? Give example also.

(f) Discuss the properties of a relation.

(g) Show that if a relational database is in BCNF, then it is also in 3NF.

(h) What is query processing ? What are the typical phases of query processing ?

UNIT – I

2. (a) What does defining, manipulating, sharing, maintaining and protecting of a database means ?

(b) Discuss different languages used in DBMS for storage, manipulation and querying of data.

3. (a) Discuss the capabilities that should be provided by a DBMS.

(b) What are different types of database end users ? Discuss the main activities of each.

UNIT – II

4. Differentiate two-tier and three-tier client-server architecture with diagram and how three-tier architecture is appropriate for web applications ?

5. What are the different ways of classifying a DBMS ?

UNIT – III

6. Explain alternatives for specifying structural constraints on relationship types. What are the advantages and disadvantages of each ?

7. (a) Discuss entity integrity and referential integrity constraints. Why is each considered important ?

(b) What are the reasons that lead to the occurrence of null values in relation ?