63/2 (SEM-1) CSIT 1.4

2021

(held in 2022)

CSIT

(Theory Paper)

Paper Code : CSIT-1.4

(Adavanced Database Management Systems)

Full Marks – 100

Time – Three hours

The figure in the margin indicate full marks for the questions.

1. Answer for the following questions :   1×6=6

   (a) What is characteristics of Primary Key ?

   (b) Which normal form depends upon the property of transitivity ?

   (c) By which term the size of data is known ?

   (d) How relation is different from relation state ?

[Turn over

(e) What is participation in ER Diagram ?

(f) What is data abstraction in BDMS ?

2. Answer any *five* from the following questions :

$$3 \times 5 = 15$$

(a) How composite attribute is different from atomic attribute ? Explain with example.

(b) Define DBMS. Give brief description on the disadvantages of DBMS.

(c) What is cascading rollback ? Explain with example.

(d) How natural join is different from equijoin ? Explain with example.

(e) Mention the inference rules for functional dependencies.

(f) Difference between prime and non-prime attributes.

3. Answer any *five* from the following questions :

$$4 \times 5 = 20$$

(a) How SELECT operation works ? Retrieve the name and address of all employees who work for the Research Department.

(b) Discuss the three schema architecture of DBMS.

(c) Define schema. How is it different from relation ? Explain.

(d) What are the ACID properties in transaction processing ? Mention all.

(e) Discuss the syntax of the following :

CREATE, INSERT, UPDATE, ALTER, DELETE with proper examples.

(f) Discuss the DIVISION operation in relational algebra with example.

4. Answer any *five* from the following questions :

$$6 \times 5 = 30$$

(a) Draw an ER Diagram for Student Management System for Bodoland University.

(b) Write a technique for transforming ER model to relation schema with example.

(c) Discuss the informal design guidelines for relation schema with proper example.

(d) Write an algorithim for finding a Minimal Cover F for a set E of functional dependencies. Find the minimal cover. Find the minimal cover of the following set F of functional dependencies

$$F = \{B \rightarrow A, D \rightarrow A, AB \rightarrow D\}$$

(e) Discuss the different types of normal forms with proper examples.

(f) What is conflict serializability ? How to test for conflict serializability of a schedule ? Discuss with examples.

5. Write short notes on any *three* :   3×3=9

(a) Foreign Key

(b) Primary Key

(c) Transaction Processing

(d) Data Fragmentation.