311303

December 2022
BCA- III SEMESTER
Database Management System (BCA-17-203)

Time : 3 Hours]   [Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1.   (a) Describe any *four* functions of Database Administrator [DBA].   (1.5)

      (b) What do you mean by DBMS catalog and metadata?   (1.5)

      (c) What are the desirable properties of transactions? (1.5)

      (d) Define primary key and foreign key.   (1.5)

      (e) Define entity with examples.   (1.5)

      (f) What is data independence. Explain its types. (1.5)

      (g) What do you mean by query optimization.   (1.5)

(h) Explain inner and outer join with an example. (1.5)

(i) How are storage devices classified? (1.5)

(j) What are the applications of relational algebra in RDBMS? (1.5)

PART-B

2. (a) What is Normalization? Explain different normal forms. (10)

   (b) Explain functional decomposition with an example. (5)

3. (a) Compare file-oriented approach and database-oriented approach. Discuss pros and cons of both the approaches. (5)

   (b) Discuss different database languages. (10)

4. Suppose you are given the following requirements for a simple database for the National Hockey League (NHL):

   (i) the NHL has many teams,

   (ii) each team has a name, a city, a coach, a captain, and a set of players,

   (iii) each player belongs to only one team,

   (iv) each player has a name, a position (such as left wing or goalie), a skill level, and a set of injury records,

   (v) a team captain is also a player,

   (vi) a game is played between two teams (referred to as host_team and guest_team) and has a date (such as May 11th, 1999) and a score (such as 4 to 2).

   Construct a clean and concise ER diagram for the NHL database. List your assumptions and clearly indicate the cardinality mappings as well as any role indicators in your ER diagram. (15)

5. (a) Explain security and recovery in DBMS.

   (b) Explain different integrity constraints with an example.

6. (a) Explain Serializability. What are conflict and view serializable schedules?

   (b) Explain Armstrong Axioms. (10)

7. Write note on :

   (a) Multi-valued dependencies.

   (b) Closure of attribute sets.

   (c) FOR and FOREACH.

   (d) Triggers.

   (e) FETCH and UPDATE. (15)