Total number of printed pages–4

1 (Sem–2) COA

2025

COMPUTER APPLICATION

Paper : COA0200404

(Database Management System)

Full Marks : 45

Time : 2 hours

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

1. Answer the following questions as directed : 1×5=5

   (a) Which of these is an advantage of database system ?

   (i) Data abstraction

   (ii) Program-data independence

   (iii) Centralized data management

   (iv) All of the above

   (b) The person who has the central control over data and application programs is _____ . *(Fill in the blank)*

(c) The _____ model is an extension of the relational data model.
(Fill in the blank)

(d) Which of the following clauses is used to restrict groups returned by the GROUP By clause ?
(i) DISTINCT
(ii) WHERE
(iii) EXISTS
(iv) HAVING

(e) A functional-dependency is a relationship between _____.
(Fill in the blank)

2. Answer ***any five*** questions from the following : 2×5=10

(a) What is a file-processing system ?

(b) What is SQL ? What are the characteristics of SQL ?

(c) What are the different types of database users who interact with the database system ?

(d) Explain mapping in three-schema architecture.

(e) Define Normalization.

(f) What is database schema ? Explain with the help of an example.

(g) Give *two* characteristics of relation.

(h) Explain briefly about referential integrity constraints.

(i) Explain the difference between candidate keys and super keys.

(j) Briefly describe conceptual data modeling.

3. Answer ***any four*** questions from the following : 5×4=20

(a) Who is a database administrator (DBA) ? What are the various responsibilities of a DBA ?

(b) Explain the three-level architecture of DBMS with the help of an example. Mention its advantages also.

(c) Define the term entity. What is the difference between tangible and non-tangible entity ?

(d) Define the term relationship. Illustrate the difference between relationship type and relationship instance.

(e) What do you understand by the term "degree of a relationship" ? Explain with the help of an example.

(f) What is BCNF in normalization? Explain.

(g) Which operator of SQL is used to specify string patterns in the queries? Explain in detail with examples.

(h) Write the difference between interactive SQL and Embedded SQL.

4. Answer ***any one*** question from the following: 10×1=10

(a) What are the main differences between a file processing system and a database system?

(b) Compare the *three* record-based database models. According to you, which is the best model and why?

(c) Write short notes on :

(i) tuple

(ii) attribute

(iii) relation

(iv) key

(v) null

(d) Define Normalization and why is it done? Explain 1NF, 2NF, 3NF and 4NF with suitable examples.