3 (Sem–4/CBCS) CSC HC 3

2024

COMPUTER SCIENCE

(Honours Core)

Paper : CSC–HC–4036

(Database Management System)

Full Marks : 60

Time : Three hours

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

1. Choose the right option from the following : 1×7=7

   (i) An attribute of one table matching the primary key of another table is called

   (a) foreign key

   (b) shadow paging

   (c) BCNF

   (d) entity relation

   (ii) ER modeling technique is

   (a) bottom-up approach

(b) top-down approach

(c) left-right approach

(d) None of the above

(iii) A logical scheme

(a) is a standard way of organizing information into accessible parts

(b) is the entire database

(c) describes how data is actually stored on drive

(d) None of the above

(iv) Which normal form is considered adequate for normal relational database design ?

(a) 2NF

(b) BCNF

(c) 4NF

(d) 3NF

(v) In a multiuser database, if two users wish to update the same record at the same time, they are prevented from doing so by

(a) jamming

(b) password

(c) record lock

(d) documentation

(vi) An SQL command should be terminated with a

(a) , (comma)

(b) : (colon)

(c) ; (semicolon)

(d) . (full stop)

(vii) Redundancy is dangerous as it is a potential threat to data

(a) integrity

(b) consistency

(c) sufficiency

(d) Both (a) and (b) above

2. Answer the following questions : 2×4=8

(i) What is composite key ?

(ii) Define tuple in terms of database.

(iii) What is functional dependency?

(iv) Define weak entity. How is it represented in an ER diagram?

3. Write short notes on : ***(any three)*** 5×3=15

(i) Characteristics of database approach

(ii) Relationship types

(iii) Concurrency control

(iv) ACID property

(v) Database connectivity using JDBC

4. Answer ***any three*** : 10×3=30

(i) Describe the relational model constrains.

(ii) Design a database for all employees of an business organization with the help of an E-R diagram. The database must have the scope for retaining all important data about the employees including their position, payroll, academics, performance etc.

(iii) Describe the important operations of relational algebra.

(iv) Describe at least six important SQL commands with syntax. Also mention the respective language category of each command.

(v) Describe the importance of database in the process of digitization.

(vi) Describe the ANSI/SPARC three-schema architecture.
