CBCS SCHEME

USN | | | | | | | | | | |

17CS53

Fifth Semester B.E. Degree Examination, Jan./Feb.2021
Database Management System

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Discuss the main characteristics of the database approach and how it differs from traditional file systems? **(08 Marks)**

b. What are the different types of database end users? Discuss the main activities of each. **(06 Marks)**

c. Describe the three schema architecture? **(06 Marks)**

OR

2 a. Design an ER diagram for company database with atleast four entities. **(08 Marks)**

b. What is meant by Recursive relationship type? Give some example of recursive relationship type. **(06 Marks)**

c. What is Generalization? Illustrate how it is helpful with an example. **(06 Marks)**

Module-2

3 a. Discuss the characteristics of relation that make them different from ordinary tables. **(08 Marks)**

b. Discuss DIVISION operation. Find the quotient for the following : A/B_1, A/B_2 and A/B_3; where A, B_1, B_2 and B_3 are

A=

SNo.	PNo.
S_1	P_1
S_1	P_2
S_1	P_3
S_1	P_4
S_2	P_1
S_2	P_2
S_3	P_2
S_4	P_2
S_4	P_4

B_1 =

PNo.
P_2

B_2 =

PNo.
P_2
P_4

B_3 =

PNo.
P_1
P_2
P_4

(08 Marks)

c. Explain the basic datatypes available for attributes in SQL. **(04 Marks)**

OR

4 a. Explain the steps to convert the basic ER model to Relational Database Schema? **(10 Marks)**

b. For the following relations for a book club :
MEMBERS (member-id, Name, Designation, Age)
BOOKS (Bookid, BookTitle, Book-Author, Book-Publisher, Book-price)
RESERVES (Member-id, Book-id, Date)
Write the SQL queries,

(i) Find the names of members who are professors older than 45 years.
(ii) List the titles of books reserved by professors.
(iii) Find ID's of members who have not reserved books that cost more than Rs.500.
(iv) Find the authors and titles of books reserved on 27-May-2017.
(v) Find the names of members who have reserved all books. **(10 Marks)**

Module-3

5 a. What are the components of the JDBC architecture? Describe four different architectural alternatives for JDBC drivers. **(10 Marks)**

b. Why are stored procedures important? How do we declare stored procedure and how they called from application code? **(05 Marks)**

c. Explain the impedance mismatch between host Languages and SQL. **(05 Marks)**

OR

6 a. What is a three tier architecture? What advantages it offer over single tier and two tier architectures? Give a short overview of the functionality at each of the three tiers. **(10 Marks)**

b. What is SQLJ and how it is different from JDBC? **(05 Marks)**

c. What is CGI and what problems does it address? **(05 Marks)**

Module-4

7 a. Explain an Informal design guidelines for a relational schema design. **(08 Marks)**

b. What do you understand by attribute closure? Give an example. **(04 Marks)**

c. Consider the following relations for published books"
Book (Book_title, Author_Name, Book_type, List_Price, Author_Application, Publisher)
Suppose the following dependencies exists
Book_Title → Publisher, Book_Type
Book_Type→ List_price
Author_Name→ Author_Affiliation.
(i) What normal form is the relation in? Explain your answer.
(ii) Apply normalization until you cannot decompose the relations further, state the reasons behind each decomposition. **(08 Marks)**

OR

8 a. A set of functional dependencies for the relation R{A, B, C, D, E, F} is AB→C, C→A, BC→D, ACD→B, BE→C, EC→FA, CF→BD, D→E. Find minimal cover for this set of functional dependencies. **(10 Marks)**

b. Define fourth normal form? When is it violated? Why is it useful? **(06 Marks)**

c. Why is the domain key normal form (DKNF) known as ultimate normal form? **(04 Marks)**

Module-5

9 a. Explain the desirable properties of transaction. **(08 Marks)**

b. Describe the four levels of isolation in SQL. **(06 Marks)**

c. What is the two phase locking protocol? How does it Guarantee serializability? **(06 Marks)**

OR

10 a. What is a time stamp? How does the system generates time stamps? **(06 Marks)**

b. Describe the actions taken by the recovery manager during checkpointing. **(06 Marks)**

c. Explain shadow paging with an example. **(08 Marks)**

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