

Day & Date: Friday, 10/03/2023

PRN: _____

Time : 3.00 pm to 4.30 pm

Max Marks: **30**

IMP: Verify that you have received question papers with correct course code, branch etc.

- Instructions**
- All questions are compulsory.
 - Writing question number on answer book is compulsory otherwise answers may not be assessed.
 - Assume suitable data wherever necessary.
 - Figures to the right of question text indicate full marks.
 - Mobile phones, smart gadgets and programmable calculators are strictly prohibited.
 - Except PRN anything else writing on question paper is not allowed.
 - Exchange/Sharing of stationery, calculator etc. not allowed.

Text on the right of marks indicates course outcomes (Only for faculty use)

- | | Marks | |
|---|-------|-----|
| Q1 A) Perform DDL, DML, DCL and TCL commands. | 5 | CO1 |
| B) List five ways in which the type declaration system of a language such as Java or C++ differs from the data definition language used in a database. | 5 | CO1 |
| Q2 A) Give an expression in the relational algebra to express each of the following queries: | 5 | CO1 |
| a. Find the names of all employees who live in city "Miami". | | |
| b. Find the names of all employees whose salary is greater than \$100,000. | | |
| c. Find the names of all employees who live in "Miami" and whose salary is greater than \$100,000. | | |
| d. Find the names of all branches located in "Chicago". | | |
| e. Find the names of all borrowers who have a loan in branch "Downtown". | | |
| B) Explain about nested queries in DBMS with following tables to find all students that have above-average GPAs | 5 | CO2 |

Student table:

id	name	class_id	GPA
1	Jack Black	3	3.45
2	Daniel White	1	3.15
3	Kathrine Star	1	3.85
4	Helen Bright	2	3.10
5	Steve May	2	2.40

Teacher table:

id	name	subject	class_id	monthly salary
1	Elisabeth Grey	History	3	2,500
2	Robert Sun	Literature	[NULL]	2,000

3	John Churchill	English	1	2,350
4	Sara Parker	Math	2	3,000

Class table:

id	grade	teacher_id	number_of_students
1	10	3	21
2	11	4	25
3	12	1	28

Q3 A) What is Normalization? Why do we need Normalization?

B) Explain Closure in DBMS . What are Steps to Find Closure of an attribute set

Consider a relation R (A , B , C , D , E , F , G) with the functional dependencies-

$A \rightarrow BC$

$BC \rightarrow DE$

$D \rightarrow F$

$CF \rightarrow G$

find the closure of attribute set {B, C}

.....End of question paper