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Total No. of Pages : 03

Total No. of Questions : 09

M.Sc. (Computer Science) (Sem.-1)
DATABASE MANAGEMENT SYSTEM
Subject Code : MSC-103
M.Code : 70889
Date of Examination : 23-01-2023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTIONS-A, B, C & D** contains **TWO** questions each carrying **TEN** marks each and students has to attempt any **ONE** question from each **SECTION**.
2. **SECTION-E** is **COMPULSORY** consisting of **TEN** questions carrying **TWENTY** marks in all.

SECTION-A

1.
 - a) What is the difference between logical data independence and physical data Independence? Which one is harder to achieve? Why?
 - b) Explain the role of DBA.
2.
 - a) What four main types of actions involve in databases? Briefly discuss each.
 - b) Discuss the capabilities that should be provided by a DBMS.

SECTION-B

3.
 - a) Discuss the entity integrity and referential integrity constraints. Why is each considered important?
 - b) Why are tuples in a relation not ordered?
4.
 - a) What are data models? Compare record based data models.
 - b) Why do we designate one of the candidate keys of a relation to be the primary key?

SECTION-C

5. For the following relation schema:

Opening(Account_no, Open_date, Last_deposit_date, Last_withdrawal_date)

Deposit(Account_no, Date, Amount)

Withdrawal(Account_no, date, Amount)

Account_holder(Account_no, Name, City_code, Pin_code, State_code)

Cities(City_code, city_name, State_code)

State(State_code, State_name)

Give an expression in SQL for each of the following queries:

- a) List all the cities of state Punjab.
 - b) List all the cities names from which there are no Account Holder.
 - c) List all the Account Number, which do not have any transaction after opening.
 - d) List the City Names and their pin code for cities of state Punjab.
 - e) List the names of all states available.
6. Explain functional dependency, non-trivial functional dependency, fully functional dependency and multi-valued functional dependency with example.

SECTION-D

- 7. Compare binary locks to exclusive / shared locks. Why is the latter type of locks preferable?
- 8. Describe the shadow paging recovery technique. List down its advantages and disadvantages.

SECTION-E

9. Write briefly:

- a) Define foreign key.
- b) Define strong entity.
- c) List down applications of 3-tier architecture of database.

- d) Define 3NF.
- e) What do you mean by closures of functional dependency?
- f) What is cardinality of a relation?
- g) Define concurrent schedule.
- h) Define Normalization.
- i) Define Physical level of database architecture.
- j) Define DCL.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.