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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.

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