

	b)	
	c)	
	d)	
	e)	
	f)	
	Total Marks	40 Marks

➤ **Nature of Practical Examination:** **(Maximum Marks 50)**

The Practical Examination is conducted at the end of each semester which will be of 3 hours duration and of 50 maximum marks. There will be four questions, out of these, student has to attempt Any Two questions. *No paper work is required for the Practical exam.* The marks distribution for the practical paper is given below:

Each question carries	: 20 marks (20 X 2 = 40 marks)
Certified Journal carries	: 5 marks.
Viva based on practical carries	: 5 marks.

B.Sc. Part – I Computer Science (Optional) (Semester –I) (NEP)
Course I Course Code: DSC-II
Course Title: Database Concepts
Total Contact Hours: 30 Hrs (30 lectures of 60 min.)
Teaching Scheme: Theory – 02 Lect. / Week

Credits: 02

Total Marks: 50

Course Outcomes:

After successful completion of this course, students will able to:

- 1) Describe the basic concepts of DBMS and various databases used in real applications.
- 2) Demonstrate the principles behind systematic database design approaches.
- 3) Describe the fundamental elements of Relational Database Management Systems.
- 4) Use various commands in data languages with example.

Unit – 1 Basics of RDBMS

(15 hrs.)

Characteristics of database approach, advantages and disadvantages of DBMS, Data models: Hierarchical, Network, Relational, Schema and Instances, DBMS architecture: Three Schema Architecture, Internal, Conceptual, External, Data independence: Logical, Physical, Concept of RDBMS, Terminologies: relation, attribute, domain, tuple, entities, Integrity Constraints (Domain, Entity, Referential), Entity Relationship Model, Entity Relationships: one-one, one-many, many-one, many-many, Key: Super key, Composite Key, Candidate Key, Primary Key, Alternate Key or Secondary Key, Foreign Key), Normalization: 1NF, 2NF, 3NF, De-normalization, Relational algebra.

Unit – 2 Basics of MySQL

(15 hrs.)

Features of MySQL, Data types, User management, Database (Create, Use, Drop, Show, Copy), DDL, DML, DCL, TCL Commands, Clauses – Order by, where and group by, Operators : Arithmetic(DIV, /, -, +, *, %, MOD), Comparison operator (=, <>, >, <, >=, <=), Set operators: Union, Union all, Intersect, Minus Another Operator: like, in, not, between, exists, all, any, is null, is not null, distinct.

Reference Books:

1. R. Elmasri, S.B. Navathe, Fundamentals of Database Systems 6th Edition, Pearson Education, 2010.
2. R. Ramakrishanan, J. Gehrke, Database Management Systems 3rd Edition, McGraw-Hill, 2002.
3. A. Silberschatz, H.F. Korth, S. Sudarshan, Database System Concepts 6th Edition, McGraw Hill, 2010.
4. R. Elmasri, S.B. Navathe Database Systems Models, Languages, Design and application Programming, 6th Edition, Pearson Education, 2013.
5. Database System Concept – Silberschatz, Korth
6. Introduction to Database Systems C. J. Date Pearsons Education
7. Learning MySQL- Hugh Williams, Saied Tahaghoghi
8. MySQL in a Nutshell, 2 nd Edition-A Desktop Quick Reference- Russell Dyer