

B-1

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B.Sc./5th Sem/COS/25(NEP)

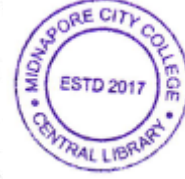
2025

5th Semester Examination (CCFUP : NEP)

COMPUTER SCIENCE

Paper : MJ 9-T (Single Core Major)

[Database Management Systems]



Full Marks : 40

Time : Two Hours

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

Group - A

Answer any *five* questions : $2 \times 5 = 10$

1. What is data dictionary?
2. What is metadata? Give an example.
- ~~3.~~ What is the objective of normalization?
- ~~4.~~ What is a composite key? Give example.
- ~~5.~~ What do you mean by view in a database?
- ~~6.~~ What is referential integrity?
- ~~7.~~ What do you mean by a weak entity set?
- ~~8.~~ Differentiate between Schema and Instance.

P.T.O.

VN-5/48 - 500



(2)

Group - B

Answer any *four* questions : 5×4=20

9. Explain with example Super key, Candidate key and Primary key.
10. Explain insertion, deletion, and modification anomalies with suitable example.
11. Report (rid, editor, deptno, dname, daddr, aid, aname, aaddr), F = {rid -> editor; editor -> deptno; deptno -> dname, daddr; aid -> aname, aaddr}. Determine whether the relation is in 3NF. If not, normalize it into 3NF.
12. Explain ACID properties.
13. 'BCNF is stronger than 3NF' — Justify the statement.
14. Write a short note on 2-phase locking protocol.

Group - C

Answer any *one* question : 10×1=10

15. Explain the three-tier architecture of DBMS with a diagram. What is the difference between DDL and DML? Briefly explain. 6+4
16. Consider the following relations :
HOTEL (hotelno, name, address)
ROOM (roomno, hotelno, type, price_pn)
BOOKING (hotelno, guestno, datefrom, dateto, roomno)
GUEST (guestno, name, address)

(3)

where the underlined column names are primary keys.

Write down expressions in SQL/Relational algebra for the following queries :

- (i) List all the hotels which are situated in Kolkata.
- (ii) Count total number of single rooms with a charge below Rs. 1000 per night.
- (iii) List the names of all guests who stay at TTC Hotel from 25th December to 1st January of last year. 3+3+4

