



RAN-2511001104022001

B.Sc. (IT) (NEP) (Sem.- IV) Examination April - 2026

RDBMS and NoSQL Databases (Paper - 404)

[Total Marks: 50

સૂચના : / Instructions (1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી. Fill up strictly the above details on your answer book	Seat No.: <table border="1"> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table> Student's Signature						

Q.1. [A] Define the following terms [Any Five] [5]

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|-------------------|------------------|
| (1) Transitive FD | (2) Sharding |
| (3) Query Parsing | (4) Cross Join |
| (5) Self Join | (6) Augmentation |

Q.1. [B] Answer following questions in short [Any Five] [5]

- (1) What is a BASE property?
- (2) How to represent selection operation in relational algebra?
- (3) What is a table level constraint?
- (4) What is the condition for BCNF?
- (5) Explain having clause?
- (6) Explain any two date functions.

Q.2. [A] Answer the following questions in detail [Any Two] [10]

- (1) How to join two tables with inner join? Explain with an example.
- (2) Explain basic steps of query processing? What are the different algorithms for query optimizations?
- (3) What is 3rd Normal form? How to convert a table from 2NF to 3NF?

Q.2. [B] Answer the following questions in brief [Any Two] [6]

- (1) What is the CAP theorem?
- (2) What are the parameters for measuring the query cost?
- (3) What is an user_constraints table?

Q.3. [A] Answer the following questions in detail [Any Two] [10]

- (1) Explain alter table command with all options.
- (2) What is MongoDB? How to create database and collections? Explain method to insert with an example.
- (3) Analyse following existing FD F:
 $\{ T \twoheadrightarrow X, Y \twoheadrightarrow J, X \twoheadrightarrow Z, J \twoheadrightarrow L, Y \twoheadrightarrow K \}$
 What is the closure set? Find the closure set F^+ and explain the rules for finding it.

- Q.3. [B] Answer the following questions in brief [Any Two] [6]**
- (1) Differentiate RDBMS and NoSQL.
 - (2) What is a self referential integrity constraint?
 - (3) What is create view command? What are the conditions to update a view?
- Q.4. [A] Analyse flight ticket booking system and design an EER for the same system. [5]**
- Q.4. [B] Analyse the following tables and solve queries: [3]**
- Stud** (studid, name, area, gender), **Marks** (studid, CPP,IOT)
1. Find the students getting highest marks in IOT subject.
 2. Count total number of students for each gender.
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