

Tribhuvan University  
Institute of Science and Technology  
2082  
☆

Bachelor Level / Fourth Year / Eighth Semester/ Science  
**Computer Science and Information Technology (CSC461)**  
(Advanced Database)  
**(NEW COURSE)**

Full Marks: 60  
Pass Marks: 24  
Time: 3 hours.

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

**Section A**

**Long answer questions**

**Attempt any TWO questions**

**(2 × 10 = 20)**

1. Discuss the reasons for converting SQL queries into relational algebra. What is meant by the term heuristic optimization? Discuss the main heuristics that are applied during query optimization with an example. [2 + 8]
2. List the types of transparency in distributed database. Explain the distributed database architecture. [3 + 7]
3. How do spatial databases differ from regular databases? What are deductive databases? How do you apply trigger in active database? Illustrate with an example. [2 + 3 + 5]

**Section B**

**Short answer Questions**

**Attempt any EIGHT questions**

**(8 × 5 = 40)**

4. Discuss the replication and allocation techniques for distributed database design. [5]
5. State CAP theorem. What is meant by cost based query optimization? [2.5 + 2.5]
6. Explain the features of NOSQL system. [5]
7. Discuss the two main types of constraints on specializations and generalizations. [5]
8. Discuss about super type and sub type with an example. [5]
9. Distinguish between dis-jointness and overlap constraints. [5]
10. Describe about the different graphical notations for representing ODL schemas. [5]
11. How do you map EER to relation? Illustrate with an example. [5]
12. How do you specify object persistence via naming and reachability? [5]