

Mid-West University  
**Examinations Management Office**  
End Semester Examinations 2081

Bachelor level/ B.E. Computer/ 3<sup>rd</sup> Semester

Full Marks: 50

Time: 3 hours

Pass Marks: 25

**Subject: Database Management System (CO432/CO506)**

- Attempt all the questions
- Figures in the margin indicate full marks.
- Assume suitable values, with a stipulation, if necessary.
- Candidates are required to answer the questions in their own words as far as possible.

1. What do you mean by schema and instances? Briefly explain the different level of data abstraction. [1+4]
2. Explain specialization and generalization and draw an ER-diagram of database of bank. Each bank can have multiple branches, and each branch can have multiple account and loans. [2+3]
3. Consider following relations and write relational algebra statements for given queries [5]  
Police (Pid, Name, Post)  
Thief (Tid, name, age)  
Catches (Pid, Tid, Caught-date)
  - a. List name of all inspectors
  - b. List name of all thieves who are below 20 years
  - c. How many thieves are caught on 10 Jan. 2024
  - d. Remove all thieves who are above 55 years.
  - e. Remove record of police whose name is "R.thapa"
4. Consider the following database and write down the SQL to perform the following [5]  
Department (dept\_no, d\_name, City)  
Employee (emp\_id, e\_name, Salary)  
Works (dept\_no, emp\_id)
  - a. Display the name of employees
  - b. Display the total number of departments
  - c. Find the name of employees whose salary is greater than 10000
  - d. Find the department name of the employee "Krishna"
  - e. Update the salary of employee "Raju"
5. What is normalization? Normalize the following table up to BCNF [5]

E_ID	E_name	Contact No	Post	Salary
E01	Sushil	98401,98402	Manager	40000
E02	Basant	98501	Engineer	45000
E03	Gopal	98510,98511	Manager	40000
E04	Rita	98490	Accountant	30000
E05	Sita	98601,98602	Engineer	45000
6. Describe view design with example. Explain integrity constraints. [2+3]
7. What is optimization? Explain the step involved in query processing. [1+4]
8. Describe indexed sequential file organization (ISAM). Explain hashing and hash function. [2+3]
9. Explain the ACID properties of transactions. Explain log based recovery. [2+3]
10. What is serializability? Explain types of transaction schedule. [2+3]

**The End**