NATIONAL INSTITUTE OF BUSINESS MANAGEMENT
BSc (Hons) Computing|ITB|EHN|Year-1
DIPLOMA IN COMPUTER SYSTEM DESIGN|-20.1
DIPLOMA IN SOFTWARE ENGINEERING|-20.1
DIPLOMA IN NETWORK ENGINEERING|-20.1
DATABASE MANAGEMENT SYSTEMS
01 March 2021

This paper contains **03** questions

Answer All questions.

Time: **TWO** hours.

This paper contains only 3 questions. Answer for all questions. Other than this exam student knowledge will evaluate using two course works.

The student practical knowledge evaluated during the Practical Course Work I. The student also need to develop a complete software and demonstrate to the lecturer to pass Course Work II. For both course works students should get above 40 marks for pass this module.

Question One (20 Marks)

i. Explain the importance of databases over traditional file systems by highlighting the advantages. (3 marks)

ii. List three key features of Database Management Systems and three popular DBMS tools. (3 marks)

iii. What is 3 Schema Architecture in Database Concept? Explain the levels using a simple diagram (5 marks)

iv. Explain primary key and foreign key using examples. (6 marks)

v. Why is Normalization important? Define different levels of Normalization (3 marks)

Question Two (30 Marks)

A General hospital consist of a number of wards. Each ward has a unique ward number, a name and the number of patients in that ward. A doctor is assigned to a single ward but a ward can have many doctors. A ward hosts a number of patients. Each patient's admission number (unique), name, address and telephone number and date of admission is stored. The hospital DB stores the prescribed treatment for a patient. Each treatment has a unique treatment number and description. It also keeps track of the treatment dosage for each patient. One patient may be

prescribed more than one treatment and the same treatment can be prescribed to many patients. The hospital also keeps track of the hospital ID number of each doctor (unique), name, address telephone number and specialization of each doctor. A patient is assigned to one doctor, but a doctor can treat many patients.

a. Draw an Enhanced ER diagram for the given scenario. Note: Other than the entities in the given scenario, you could include additional entities if required. (10 marks)
b. Map the EER in to the relational schema. Hint: Follow the seven steps of schema mapping. (20 marks)

Question Three (50 Marks)

Consider the following Tables

ACCOUNT_TYPE

CODE	**NAME**	**INTEREST_RATE**	**DESCRIPTION**
SAVNG	Standard Savings	7.00	Personal savings account
CHECK	Standard Checking	0.00	Personal checking account

ACCOUNT

ACCOUNT_NO	**BALANCE**	**BCODE**	**BNUMBER**	**ATYPE**
1234567890	10,000.00	Asian	5	SAVNG
1232425643	12,892.78	Asian	5	CHECK
6356890630	5987.50	Asian	3	SAVNG
2345565476	34,456.98	Asian	5	CHECK

Write SQL queries for the following.

Simple Queries (each carried 2 marks)

1. Create a database called Bank.

2. Create a table called ACCOUNT_TYPE with the above fields. Give suitable data types. Do not include DESCRIPTION field.
3. Create a table called ACCOUNT with the above fields. Give suitable data types.
4. Alter the ACCOUNT_TYPE table and add the DESCRIPTION column.
5. Alter the ACCOUNT table and add ATYPE as a foreign key constraint references to the ACCOUNT_TYPE table.
6. Write SQL statement to insert data to ACCOUNT_TYPE and ACCOUNT table. **(Only one insert query is enough)**
7. Display details of all the Account Types.
8. Display account numbers of savings accounts where balance is greater than Rs 10,000.
9. Display account numbers and balance of accounts where branch code starts with 'A'.
10. Display all account numbers which has a balance between Rs 10,000 and Rs 50,000.
11. Display Account Number and Balance of all the Accounts.
12. Update the interest rate of the "SAVNG" account to 7.5%

Use Aggregative Functions, Group by, Having, Joining) to do the following: (Each carried 4 marks)

13. Display ACCOUNT_NO, BALANCE and INTEREST_RATE applied for each account.
14. Display the total balance in each branch.
15. Display the savings account which has the minimum balance.
16. Display the account details branch wise (each branch).
17. Display ACCOUNT_NO in the ascending order of balance along with their account type (ATYPE) and account name (NAME).

Stored Procedures (6 marks)

18. Write a Stored Procedure to find the Account Numbers where the Balance is greater than an input Balance ***(Add a one parameter as a Balance to take the input)*** (5 marks)
19. Write an SQL command to execute the Stored Procedure written above with the relevant parameters. (1 mark)