PG/IS/MCA/106/24

MCA 1st Semester Examination, 2024

MCA

(*DBMS LAB*)

PAPER – MCA-106

Full Marks : 50

Time : 3 hours

Answer any **one** question **Lottery** basis

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

1. Consider the following relational schema :
   Customer (Customer_ID, Customer_Name, Contact, Address, Email)
   Product (Product_ID, Product_Name, Price, Category)
   Order (Order_ID, Customer_ID, Order_Date, Total_Amount)
   Order_Item (Order_ID, Product_ID, Quantity, Subtotal)

Write SQL queries for the following :

(*a*) Create the above database using SQL.

(*b*) List all customers who have ordered more than two products.

(*c*) Find the names of customers who placed orders in the "Electronics" category.

(*d*) Display the total amount for orders placed in the last month.

(*e*) Retrieve the names of customers along with the total number of products ordered.

$15 + 4 \times 5$

2. Consider the following relational schema :

Student (Student_ID, Student_Name, DOB, Course_ID)
Course (Course_ID, Course_Name, Credits)
Enrollment (Student_ID, Course_ID, Enrollment_Date)

Write SQL queries for the following :

(*a*) Create the above database using SQL.

(*Continued*)

(*b*) Find the names of students enrolled in more than 3 courses.

(*c*) List the courses taken by the student with the highest enrollment.

(*d*) Display the student names who have not enrolled in any courses.

(*e*) Find the student with the lowest total marks (if applicable). $15 + 4 \times 5$

3. Consider the following relational schema :

Employee (Emp_ID, Emp_Name, Position, Salary, Department_ID, Hire_Date)
Department (Dept_ID, Dept_Name, Location)
Manager (Emp_ID, Manager_ID)

Write SQL queries for the following :

(*a*) Create the above database using SQL.

(*b*) Find the average salary of employees by position.

(*c*) Find the employees who have been with the company for more than 10 years.

(*d*) Retrieve the names of employees who earn more than their managers.

(*e*) List the names of employees who joined after 1st January 2020. $15 + 4 \times 5$

4. Consider the following relational schema :

Employee (Emp_ID, Emp_Name, Job_Title, Salary, Hire_Date, Dept_ID, Manager_Name)
Department (Dept_ID, Dept_Name, Location)
Salary_Grade (Grade, Min_Salary, Max_Salary)

Write SQL queries for the following :

(*a*) Create the above database using SQL.

(*b*) Calculate the salary of each employee with a 10% bonus, rounded to the nearest whole number.

(*c*) Produce the following output :

EMPLOYEE_AND_JOBS
SMITH MANAGER
ALLEN SALESMAN
.....
FORD ANALYST
MILLER CLERK

(*d*) Perform a case-insensitive search for employees whose job titles are entered by the user.

(*e*) Display the employees hired on 1st January 2021 using a specific date format (e.g., DD/MM/YYYY). $15 + 4 \times 5$

5. Consider the following relational schema :

Book (Book_ID, Title, Author, Publisher, Category, Copies_Available)
Borrower (Card_No, Borrower_Name, Borrower_Address)
Loan (Loan_ID, Book_ID, Card_No, Issue_Date, Return_Date)

Write SQL queries for the following :

(*a*) Create the above database using SQL.

(*b*) Count the total number of books in the "Technology" category.

(*c*) Find how many students have currently borrowed the book "Database Management Systems".

(*d*) Retrieve the list of books published by "Wiley".

(*e*) Find books with fewer than 3 copies available. $15 + 4 \times 5$

6. Consider the following relational schema :

Hotel (Hotel_ID, Hotel_Name, Location)
Room (Room_No, Hotel_ID, Room_Type, Price_Per_Night)
Reservation (Reservation_ID, Hotel_ID, Guest_ID, Room_No, Date_From, Date_To)
Guest (Guest_ID, Guest_Name, Guest_Address)

Write SQL queries for the following :

(*a*) Create the above database using SQL.

(*b*) Find the total number of guests who stayed at "Grand Resort".

(*c*) Count the number of "Suite" type rooms at "Elite Hotel".

(*d*) Retrieve the names of guests who stayed in room 102 of "Ocean View" hotel on 15th May 2021.

(*e*) Find the names of hotels with more than 50 rooms. $15 + 4 \times 5$

7. Write a PL/SQL program that displays a menu to the user with the following options :

(*a*) Find employees who have been with the company for more than 5 years and earn more than 50,000.

(*b*) Increase the salary of employees in a specific department by 10%.

(*c*) Display the total salary expense for each department.

(*d*) Exit

12 + 12 + 10 + 1

The program should :

(*a*) Option 1 : Retrieve and display the names and salaries of employees who have been with the company for more than 5 years and earn more than 50,000 from the Employee table.

(*b*) Option 2 : Prompt the user to enter a department ID and increase the salary of all employees in that department by 10%.

(*c*) Option 3 : Calculate and display the total salary expense for each department using data from the Employee and Department tables.

(*d*) Option 4 : Exit the program.

8. Write a function IncreaseSalary(Emp_ID IN NUMBER, Percentage IN NUMBER) that :

(*a*) Increases the salary of the employee by the given percentage. The function should take the Emp_ID and Percentage as inputs and update the employee's salary.

(*b*) If the employee does not exist, raise an exception with the message 'Employee not found'. 20 + 15

PNB – 5 Marks

Viva – 10 Marks