B. Sc (Hons.) in CSE, Part-II, 4th Semester Examination-2021

Course Code: 520226

Course Name: Design & Analysis of Algorithms Lab

Time-3 hours **Full Marks-40**

[N.B. –Answer any two from the following questions.]

1. Implement binary search procedure using divide and conquer method.
2. Implement divide and conquer method for finding the maximum and minimum number.
3. Write a program to measure the performance using time function between bubble sort and quick sort.
4. Implement the fractional knapsack problem that will generate an optimal solution for the given set of instance.
5. Implement the 0/1 knapsack problem that will generate an optimal solutions for the given set of instance such as no of elements n, cost p_i and weight w_i
6. Write a program to find the minimum cost spanning tree using Prim's algorithm.
7. Write a program to find the single source shortest path.
8. Write a program to implement dynamic programming method for all pair's shortest path problem.
9. Using backtracking algorithm implement N-queens problem.
10. Write a program for coloring a graph.

Marks Distrubution

Source Code	: 20
Result	: 10
Viva Voce	: 10
Total	: 40

National University, Gazipur

B.Sc.(Hons.) in CSE, Part-II, 4th Semester Final Examination, 2021

CSE-520224 (Microprocessor and Assembly Language Practical)

Time: 3 hours Full Marks: 40

Answer any one question from each part.

Part – A

1. Write an assembly language program to convert a lower case letter to an uppercase letter or vice versa.
2. Write an assembly language program to read a character. If it is "y" or "Y", display it; otherwise terminate the program.
3. Write an assembly language program to determine whether a number is odd or even.
4. Write an assembly language program to add two decimal numbers.
5. Write an assembly language program to input two numbers, compare them and display the smaller one.

Part - B

6. Write an assembly language program to find the largest element of an array.
7. Write an assembly language program to calculate the average of n numbers.
8. Write an assembly language program to calculate the factorial of an integer number.
9. Write an assembly language program to sort n numbers in ascending order.
10. Write an assembly language program to accept a string from keyboard and display the string in reverse order.

Marks Distribution:

Source Code	: 20
Results	: 10
Viva-voce	: 10
Total	: 40

National University, Bangladesh

B.Sc. (Hons.) in Computer Science and Engineering

Part-2, 4th Semester Examination-2021

CSE-520222 (Database Management System Lab)

Time: 3 Hours Full Marks: 40

Answer any two of the following questions:

1. Consider the following schemas for "bank" database relations, where the primary keys are underlined.

branch (branch-name, branch_city, assets)

customer (customer-name, customer_street, customer_city)

loan (loan-number, branch_name, amount)

borrower (customer-name, loan-number)

account (account-number, branch_name, balance)

depositor (customer-name, account-number)

Write down the SQL expressions for the following queries:

i. Find all customers who have both a loan and an account at the bank.
ii. Find the average account balance at the 'Perryridge' branch.
iii. Insert record into the account relation with the values of account number is "AC-101" at "Dhanmondi" branch and the balance is tk 30000.

2. Consider the following relational schema:
employee(emp-no, name, office, age)
books(isbn, title, author, publisher)
loan(emp-no, isbn, date)

Write down the SQL expression for the following queries:

i. Print the names of all employees who have borrowed any book published by "XYZ".
ii. Print the names of all employees who have borrowed all book published by "XYZ".
iii. For each publisher, print the names of employees who have borrowed more than five books of that publisher.

3. Consider the following schemas for "bank" database relations, where the primary keys are underlined.

branch (branch-name, branch_city, assets)

customer (customer-name, customer_street, customer_city)

loan (loan-number, branch_name, amount)

borrower (customer-name, loan-number)

account (account-number, branch_name, balance)

depositor (customer-name, account-number)

Write down the SQL expressions for the following queries:

i. Find the number of depositor at each branch.
ii. List in alphabetic order all customers who have a loan at the 'Perryridge' branch.
iii. Update database to change karim's street to a new one

4. Consider the following schemas for "company" database relations, where the primary keys are underlined.
employee(employee-name, street, city)
works(employee-name, company-name, salary)
company(company-name, city)
manages(employee-name , manager-name)

Write down the SQL expressions for the following queries:

i. Find the total salary of each company.
ii. Find all employees in the database who do not work for ACI Ltd.
iii. Insert record into the employee table with proper values.

5. Consider the following schemas for "bank" database relations, where the primary keys are underlined.

branch (branch-name, branch_city, assets)

customer (customer-name, customer_street, customer_city)

loan (loan-number, branch_name, amount)

borrower (customer-name, loan-number)

account (account-number, branch_name, balance)

depositor (customer-name, account-number)

Write down the SQL expressions for the following queries:

i. Find the loan number of those loans with loan amounts between tk. 10000 and tk. 20000.
ii. Find all customers who have account but no loan at the bank.
iii. Add a record in "customer" table using a form.
iv. Display your result of query (i) on a report.

6. Consider the following schemas for "emp" database relations, Where the primary keys are underlined.
employee (employee-name, street, city)
works(employee-name, company-name, salary)
company (company-name, city)
manages (employee-name, manager-name)

Write down the SQL expressions for the following queries:

i. Find the number of tuples in the works relation.
ii. Find all employees in the database who earn more than each employee of Trust Bank.
iii. Add a record in the database using a form.
iv. Display your result of query (i) on a report.

Marks Distribution :

Theory	: 10
Implementation	: 20
Viva Voce	: 10
Total	: 40