(Full Marks 30 for each course)

Course : BCA – 401
(Numerical Analysis and Scientific Computing)
(Each question carries 15 marks)

Assignment – 1   *Total marks : 15*

1. Explain why the Bisection Method is considered a bracketing method and is guaranteed to converge, while the Newton-Raphson Method is a open method and has a faster convergence rate but is not always guaranteed to converge.

Assignment – 2   *Total marks : 15*

1. Solve the following system of linear equations using the Gauss-Seidel Iterative Method :

$$5X + 2Y + Z - 12$$

$$X + 4Y + 2Z = 15$$

$$X + 2Y + 5Z = 20$$

   a) Check if the system is diagonally dominant. If not, rearrange it to make it diagonally dominant.

   b) Perform 3 iterations, starting with the initial guess $(x_0, y_0, z_0) = (0,0,0)$.

Course : BCA – 402
(Database Management Systems)
(Each question carries 15 marks)

Assignment – 1   *Total marks :15*

1. Consider the following schema for an online bookstore :
   BOOKS(BookID, Title, Author, Price, StockQuantity)
   CUSTOMERS(CustomerID, Name, City, Email)
   ORDERS(OrderID, CustomerID, BookID, OrderDate, Quantity)

   Write SQL queries for the following:

   a) Find the names of customers who have never placed an order.
   b) Find the title of the most expensive book in the store.
   c) List the total number of orders placed by each customer, showing the customer name and the order count.

d) List all authors and the total number of books written by each author, but only for authors with more than 2 books.

<center>Or</center>

2. Draw an ER diagram on Hospital Management System.

Assignment – 2   *Total marks : 15*

1. Given two tables:

    PRODUCTS (ProductID, ProductName, Category, Price)
    SALES(SaleID, ProductID, SaleDate, Quantity, CustomerID)

Tasks :
a) Write a SQL query to list all products (show ProductID and ProductName) that have never been sold. Use a JOIN or subquery.

b) Write a SQL query using a JOIN to show the ProductName and the total quantity sold for each product. Include products that have never been sold (showing 0 for their quantity).

c) What is the difference between INNER JOIN and LEFT JOIN? Explain with respect to the results of the queries in part (a) and (b).

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Course : BCA – 403
(Operating Systems)
(Each question carries 5 marks)

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Assignment – 1   *Total marks : 15*

(Answer any three)

1. Compare between oral and written communication.   5
2. What is group discussion? How would you prepare for a group discussion?   5
3. What do you mean by the format of a letter? Show it with a specimen format of
   any one type of business letter.   5
4. What are the principles of a good presentation?   5

Assignment – 2   *Total marks : 15*

(Answer any three)

1. Prepare your resume for a job in an effective manner.   5
2. What are the characteristics of a good formal report?   5
3. What do you understand by time management?   5
4. What is self assessment? Discuss.   5

(Object Oriented Programming Using Java)
(Each question carries 15 marks)

Assignment – 1   *Total marks : 15*

 (Answer any three)

1. Explain different types of loops in C.
2. Explain the process of top-down approach of problem solving.
3. Write main features of a good programming language.
4. Discuss the different types of arithmetic and relational operators.

Assignment – 2   *Total marks : 15*

 (Answer any three)

1. Explain if, if-else, nested if-else and cascaded if-else with examples and syntax.
2. Explain in detail one-dimensional and multi-dimensional arrays.
3. Explain call by value and call by reference using examples.
4. Briefly explain
    a. Go to statement
    b. Structure

Course : BCA – 406
[RDBMS using Oracle (Practical)]
(Each question carries 5 marks)

Assignment – 1   *Total marks : 15*

 (Answer any three)

1. Write a program in C to find the greatest of three numbers.
2. Write a program in C to find area of a triangle and show its type.
3. Write a program in C to find a factorial of a number. (Use function)
4. Write a program in C to print first n natural numbers.

Assignment – 2   *Total marks : 15*

(Answer any three)
1. Write a program in C to generate the first n Fibonacci series.
2. Write a program in C to find the maximum, minimum value in an array.
3. Write a program in C to add two matrices.
4. Write a program in C to check if a string is palindrome or not.

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