BE PRINTING ENGG. THIRD YEAR SECOND SEMESTER - 2024

DATABASE MANAGEMENT SYSTEM

Time : 3 hrs **Full Marks : 100**

Ref. No. : Ex/PRN/PC/B/T/CSE/322

Group / Part (in case of half paper)

Instructions : GR-A five and GR-B three needs to be answered. The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

Answer any five of the following. **5×17 = 85**

1) Difference between file system and dbms. Draw the E-R Diagram of E-Commerce Based Shopping Management System. Differentiate between Relational model and network model. What are super key, candidate key. What are multivalued, derived attributes with example. 3+7+3+2+2

2) What are different SQL aggregate function with example. Explain 3NF, BCNF, 4NF form give suitable example. Give an example of sql queries of delete rows, update and modify records. Given FD are { A → B, B → C, and C → A } satisfies upto 4NF or not. Given a relation R(P, Q, R, S, T, U, V, W) and Functional Dependency set FD = { PQ → R, P → ST, Q → U, and U → VW }, deter mine candidate key and find closure. 2+4+3+5+3

3) a) SALESMAN (Salesman_id, Name, City, Commission)
CUSTOMER (Customer_id, Cust_Name, City, Grade, Salesman_id)
ORDERS (Ord_No, Purchase_Amt, Ord_Date, Customer_id, Salesman_id)
Write SQL queries to 1. Count the customers with grades above Kolkata's average. 2. Find the name and numbers of all salesmen who had more than one customer. 3. List all salesmen and indicate those who have and don't have customers in their cities. 4. Perform DELETE operation by removing salesman with id 1000B. All his orders must also be deleted.
b) What is Cartesian product, outer join, inner join give example. Explain cardinality ratio. Explain 3-tier architecture with diagram. 5+(5+2+5)

4) Deduce the time complexity of matrix addition. What is big o notation. Write the algorithm of ascending order sorting and find time complexity. Write the logic of polynomial addition using linked list. 3+3+6+5

5) Find postfix for A+B*(C+D)/F+D*E this expression. Write algorithm of push operation. Write the application of queue. What is underflow or overflow condition. Evaluate 843*2+- this postfix value. 5+4+2+3+3

6) Given a preorder –ABDGHEICFJK and Inorder-GDHBEIACJFK, find out postorder and draw the tree. Write adjacency and weight matrix representation of graph. What is complete binary tree. What is double ended queue explain its operations. What is degree of graph. 6+3+2+4+2

7) Explain idea of B-Tree give an example. Write the purpose of using circular queue. Write any algorithm of deletion of a node in a single linked list. What is divide and conquer method. Prove that the total no of nodes in a full binary tree with height h is 2^h-1. 3+3+4+3+4

GROUP – B

Answer any three of the following. 3×5 = 15

1) How we can represent binary tree using array and list. What is complete binary tree. 5
2) Construct the AVL Tree for the given Sequence 21, 26, 30, 9, 4, 14, 28, 18,15,10, 2, 3, 7.
3) What is ACID properties. What is read and write in transaction. 3+2
4) What is 2-phase locking protocol. How concurrency control is performed. 3+2
5) What is recursion, How Stack is used in case of recursion give example. 5
6) Writer algorithm of linear search and find time complexity of it. 5