


**JEE(MAIN + ADVANCED) : ENTHUSIAST COURSE**
**COMPUTER SCIENCE**

Time Allowed : 2 Hour

Maximum Marks : 35

**General Instructions :**

- The question paper is divided into 3 sections – A, B and C
- Section-A, consists of 7 questions (1-7). Each question carries 2 marks.
- Section-B, consists of 3 questions (8-10). Each question carries 3 marks.
- Section-C, consists of 3 questions (11-13). Each question carries 4 marks.
- Internal choices have been given for question numbers 7, 8 and 12.

**HAVE CONTROL → HAVE PATIENCE → HAVE CONFIDENCE ⇒ 100% SUCCESS**
**SECTION – A**

1. What is insertion and deletion in a stack ? (2)
2. Identify the type of topology from the following :
  - (a) Each node is connected with the help of a single cable. (1)
  - (b) Each node is connected with central switching through independent cables. (1)
3. What is relation ? Define the relational data model ? (2)
4. Write the full forms of DDL and DML. Write any two commands of DML in SQL. (2)
5. Write output for SQL queries (i) and (ii), which are based on the table : STUDENT given below : (2)

**Table: STUDENT**

| Roll No | Name    | Class | DOB        | Gender | City   | Marks |
|---------|---------|-------|------------|--------|--------|-------|
| 1       | Nanda   | X     | 06-06-1995 | M      | Agra   | 551   |
| 2       | Saurabh | XII   | 07-05-1993 | M      | Mumbai | 462   |
| 3       | Sonal   | XI    | 06-05-1994 | F      | Delhi  | 400   |
| 4       | Trisla  | XII   | 08-08-1995 | F      | Mumbai | 450   |
| 5       | Store   | XII   | 08-10-1995 | M      | Delhi  | 369   |
| 6       | Marisla | XI    | 12-12-1994 | F      | Dubai  | 250   |
| 7       | Neha    | X     | 08-12-1995 | F      | Moscow | 377   |
| 8       | Nishant | X     | 12-06-1995 | M      | Moscow | 489   |

- (a) SELECT COUNT(\*) City FROM STUDENT GROUP BY CITY HAVING COUNT(\*)>1;
- (b) SELECT MAX(DOB), MIN(DOB) FROM STUDENT ;

6. (i) Which clause is used to sort the records of a table ? (1)  
 (ii) MySQL support different character sets, which command is used to display all character sets ? (1)
7. Observe th table CLUB given below : (2)

**Table: CLUB**

| Member_ID | Member_Name | Address   | Age | Fee  |
|-----------|-------------|-----------|-----|------|
| M0001     | Sumit       | New Delhi | 20  | 2000 |
| M0002     | Nisha       | Gurgaon   | 19  | 3500 |
| M0003     | Niharika    | New Delhi | 21  | 2100 |
| M004      | Sachin      | Faridabad | 18  | 3500 |

- (a) What is the cardinality and degree of the given table ?  
 (b) If a new column ContactNo. is added and three more members join the club then how these changes will affect the degree and cardinality of the table.

**OR**

A table CUSTOMER has 10 columns but no row. Later, 10 new rows are inserted and 3 rows are deleted in the table. What is the degree and cardinality of the table CUSTOMER ?

**SECTION – B**

8. What are infix, prefix, postfix notations ? (3)

**OR**

Write an algorithm to implement push operation.

9. Define the following : (3)

- (i) Equi-Join                      (ii) Natural Join                      (iii) Non-equi join

10. Write SQL commands for the queries (i) to (iii) and outputs for (iv) to (v) based on a tables COMPANY and CUSTOMERS. (3)

**Table: COMPANY**

| CID | NAME       | CITY   | PRODUCT NAME |
|-----|------------|--------|--------------|
| 111 | SONY       | DELHI  | TV           |
| 222 | NOKIA      | MUMBAI | MOBILE       |
| 333 | ONIDA      | DELHI  | TV           |
| 444 | SONY       | MUMBAI | MOBILE       |
| 555 | BLACKBERRY | MADRAS | MOBILE       |
| 666 | DELL       | DELHI  | LAPTOP       |

**Table: CUSTOMER**

| CUSTID | NAME           | PRICE  | QTY | CID |
|--------|----------------|--------|-----|-----|
| 101    | ROHAN SHARMA   | 70,000 | 20  | 222 |
| 102    | DEEPAK KUMAR   | 50,000 | 10  | 666 |
| 103    | MOHAN KUMAR    | 30,000 | 5   | 111 |
| 104    | SAHIL BANSAL   | 35,000 | 3   | 333 |
| 105    | NEHA SONI      | 25,000 | 7   | 444 |
| 106    | SONAL AGGARWAL | 20,000 | 5   | 333 |
| 107    | ARUN SINGH     | 50,000 | 15  | 666 |

- (i) To display those company name which are having price less than 30000.  
(ii) To display the name of the companies in reverse alphabetical order.  
(iii) To increase the price by 1000 for those customer whose name starts with S ?

**SECTION – C****Each question carries 4 marks**

11. Consider the following tables SCHOOL and ADMIN and answer the following questions : (4)

**Table: SCHOOL**

| CODE | TEACHERNAME  | SUBJECT   | DOJ        | PERIODS | EXPERIENCE |
|------|--------------|-----------|------------|---------|------------|
| 1001 | Ravi Shankar | English   | 12/03/2000 | 24      | 10         |
| 1009 | Priya Rai    | Physics   | 03/09/1998 | 26      | 12         |
| 1203 | Lisa Anand   | English   | 09/04/2000 | 27      | 5          |
| 1045 | Yashraj      | Maths     | 24/08/2000 | 24      | 15         |
| 1123 | Gann         | Physics   | 16/07/1999 | 28      | 3          |
| 1167 | Harish B     | Chemistry | 19/10/1999 | 27      | 5          |
| 1215 | Umesh        | Physics   | 11/05/1998 | 22      | 16         |

**Table: ADMIN**

| CODE | Gender | Designation    |
|------|--------|----------------|
| 1001 | Male   | Vice Principal |
| 1009 | Female | Co-ordinator   |
| 1203 | Female | Co-ordinator   |
| 1045 | Male   | HOD            |
| 1123 | Male   | Senior Teacher |
| 1167 | Male   | Senior Teahcer |
| 1215 | Male   | HOD            |

Write SQL statements for the following :

- (a) To display TEACHERNAME, PERIODS of all teachers whose periods are more than 25.
- (b) To display all the information from the table SCHOOL in descending order of experience.
- (c) To display DESIGNATION without dupli-cate entries from the table ADMIN.
- (d) To display TEACHERNAME, CODE and corresponding DESIGNATION from tables SCHOOL and ADMIN of Male teachers.

12. (i) What is the difference between packet and message switching ? (2)

**OR**

Write any two difference between twisted pair-cable and coaxial cable ?

(ii) Give two difference between PAN and LAN. (2)

**OR**

What is the difference between e-mail and chat ?

13. Software Development company has set up its new center at Raipur for its office and web based activities. It has 4 blocks of building named Block A, Block B, Block C and Block D. (4)

Number of Computers

|         |     |
|---------|-----|
| Block A | 25  |
| Block B | 50  |
| Block C | 125 |
| Block D | 10  |

Shortest distances between various Blocks in meters :

|                    |    |
|--------------------|----|
| Block A to Block B | 60 |
| Block B to Block C | 40 |
| Block C to Block A | 30 |
| Block D to Block C | 50 |

- (i) Name the most suitable block where the server should be installed.
- (ii) Suggest the type of network to connect all the blocks with suitable reason.
- (iii) The company is planning to link all the blocks through secure and high-speed wired medium. Suggest a way to connect all the blocks.
- (iv) Suggest the most suitable wired medium for efficiently connecting each computer installed in every block out of the following network cables.
  - Coaxial Cable
  - Ethernet Cable
  - Single Pair Telephone Cable