

Pre – Board (Semester 2) 2022**Class : XII****Subject : Computer Science****Maximum Marks: 35****Time: 2 hours****Number of Pages : 5****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.**

Section - A

Q.1 Suppose STACK is allocated 6 memory locations and initially stack is empty (Top = 0).

Give the output of the program segment.

2

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aaa = 2
bbb = 5
push(STACK, aaa)
push(STACK, 4)
push(STACK, bbb + 2)
push(STACK, 9)
push(STACK, aaa + bbb)
while (Top > 0):
    Item = STACK.pop()
    print(Item)

```

Q.2

(i) Expand the following : GSM, CDMA

1

(ii) Ravi has purchased a new Smart TV and wants to cast a video from his mobile to his new Smart TV. Identify the type of network he is using and explain it.

1

Q.3 Differentiate between an Attribute and a Tuple in a Relational Database with suitable example.

2

Q.4 What is resultset and cursor?

2

Q.5 Consider the following table **CABHUB** give outputs for SQL queries (i) to (iv)

2

Table: CABHUB

| Vcode | VehicleName | Make | Color | Capacity | Charges |
|-------|-------------|----------|--------|----------|---------|
| 100 | Innova | Toyota | WHITE | 7 | 15 |
| 102 | SX4 | Suzuki | BLUE | 4 | 14 |
| 104 | C Class | Mercedes | RED | 4 | 35 |
| 105 | A-Star | Suzuki | WHITE | 3 | 14 |
| 108 | Indigo | Tata | SILVER | 3 | 12 |

- (i) SELECT COUNT(DISTINCT Make) FROM CABHUB;
- (ii) SELECT MAX(Charges), MIN(Charges) FROM CABHUB;
- (iii) SELECT COUNT(*), Make FROM CABHUB group by Make;
- (iv) SELECT VehicleName FROM CABHUB WHERE Capacity=4 and charges >25;

Q.6 (i) How many Primary and Foreign keys can a table have? 1

(ii) In SQL, what is the error in following query : 1
 SELECT NAME, SAL, DESIGNATION WHERE DISCOUNT=NULL;

Q.7 From the following Tables (PRODUCT) AND (CLIENT) answer the question (i) and (ii) 2

Table : PRODUCT

| P_ID | ProductName | Manufacturer | Price |
|------|---------------|--------------|-------|
| TP01 | Talcom Powder | LAK | 40 |
| FW05 | Face Wash | ABC | 45 |
| BS01 | Bath Soap | ABC | 55 |
| SH06 | Shampoo | XYZ | 120 |
| FW12 | Face Wash | XYZ | 95 |

TABLE : CLIENT

| C_ID | ClientName | City | P_ID |
|------|---------------|-----------|------|
| 01 | Cosmetic Shop | Delhi | FW05 |
| 06 | Total Health | Mumbai | BS01 |
| 12 | Live Life | Delhi | SH06 |
| 15 | Pretty Woman | Delhi | FW12 |
| 16 | Dreams | Bangalore | TP01 |

- (i) Identify Primary Key from both the tables
- (ii) Can we delete the record of TP01 from table PRODUCT? If not give reason.

OR

- (i) Identify the foreign key in CLIENT table
- (ii) What is the degree and cardinality of PRODUCT table.

Section - B

Q.8 Ram has created a dictionary containing names and fees as key value pairs of 8 students. 3

Write a program, with separate user defined functions to perform the following operations:

- Push the keys (name of the student) of the dictionary into a stack, where the corresponding value (fees) is less than 2000 but greater than 1000.
- Pop and display the content of the stack.

OR

Anita has a list containing 15 integers. You need to help her create a program with separate user defined functions to perform the following operations based on this list.

- Traverse the content of the list and push the odd numbers into a stack.
- Pop and display the content of the stack.

Q.9

- (i) Differentiate between WHERE and HAVING clause. 2
(ii) Which keyword is used to remove redundant data from a relation? 1

Q.10 Write SQL query to create a table “Sports” with the following structure: 3

Table: Job

| Field name | Datatype | Size | Constraint |
|------------|----------|------|-------------|
| S_Code | Integer | 3 | Primary Key |
| S_Name | Varchar | 25 | Not Null |
| Coach-id | Integer | | unique |
| Fees | integer | | |

Section – C

Q.11 Consider the following tables SENDER and RECEIVER : 4

TABLE : SENDER

| SenderID | SenderName | SenderAddress | SenderCity |
|----------|------------|-------------------|------------|
| ND01 | R Jain | 2, ABC Appts | New Delhi |
| MU02 | H Sinha | 12, Newtown | Mumbai |
| MU15 | S Jha | 27/A, Park Street | Mumbai |
| ND50 | T Prasad | 122-k, SDA | New Delhi |

TABLE : RECEIVER

| RecID | SenderID | RecName | RecAddress | RecCity |
|-------|----------|------------|-------------------|-----------|
| KO05 | ND01 | R Bajpayee | 5, Central Avenue | Kolkata |
| ND08 | MU02 | S Mahajan | 116, A Vihar | New Delhi |
| MU19 | ND01 | H Singh | 2A, Andheri East | Mumbai |
| MU32 | MU15 | P K Swamy | B5, C S Terminus | Mumbai |
| ND48 | ND50 | S Tripathi | 13, Mayur Vihar | New Delhi |

Write SQL commands for the following statements :

- (i) To display the names of all Senders from Mumbai.
(ii) To display the RecID, SenderName, SenderAddress, RecName, RecAddress for every Receiver.
(iii) To display Receiver details in ascending order of RecName.
(iv) To display number of Receivers from each city.

Q.12

(i) Define the term **bandwidth**. Write unit of bandwidth.

2

OR

Identify the following device:

- (a) A device that is used to connect different types of networks. It performs the necessary translation so that connected networks can communicate properly.
- (b) A device that converts data from digital bit stream into an analog signal and vice versa.

(ii) What are the similarities and differences between bus and tree topologies?

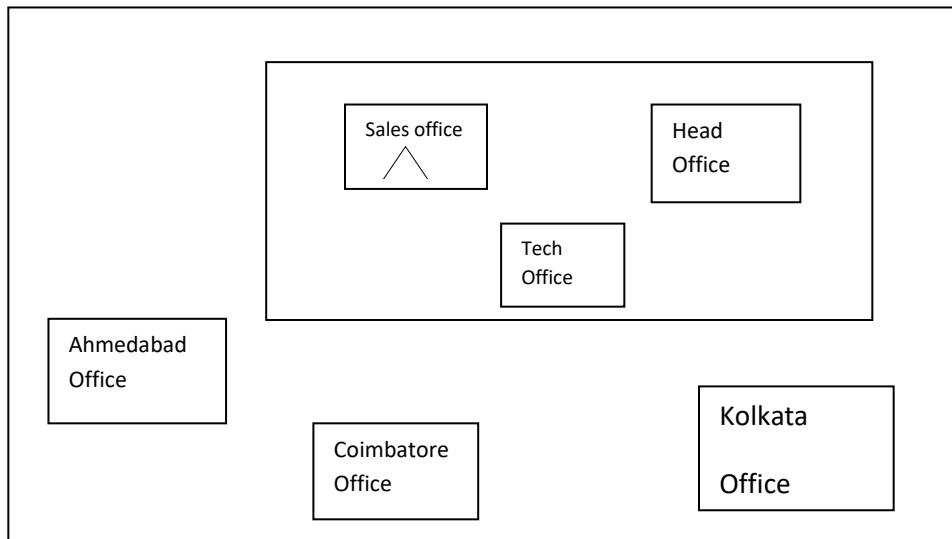
2

Q.13

“Hindustan Connecting World Association” is planning to start their offices in four major cities in India to provide regional IT infrastructure support in the field of Education & Culture. The company has planned to set up their head office in New Delhi in three locations and have named their New Delhi offices as “Sales Office”, “Head office” and “Tech Office”. The company’s regional offices are located at “Coimbatore”, “Kolkata” and “Ahmedabad”.

4

A rough layout of the same is as follows :



Approximate distances between these offices as per network survey team is as follows :

| Place From | Place To | Distance |
|-------------|-------------------|----------|
| Head Office | Sales Office | 10KM |
| Head Office | Tech Office | 70 Meter |
| Head Office | Kolkata Office | 1291 KM |
| Head Office | Ahmedabad Office | 790 KM |
| Head Office | Coimbatore Office | 1952 KM |

In continuation of the above, the company experts have planned to install the following number of computers in each of their offices :

| | |
|-------------------|-----|
| Head Office | 100 |
| Sales Office | 20 |
| Tech Office | 50 |
| Kolkata Office | 50 |
| Ahmedabad Office | 50 |
| Coimbatore Office | 50 |

(i) Suggest network type (out of LAN, MAN, WAN) for connecting each of the following set of their offices :

- Head Office and Tech Office
- Head Office and Coimbatore Office

(ii) Which device you will suggest to be procured by the company of connecting all the computers with in each of their offices out of the following devices?

- Modem
- Telephone
- Switch/Hub

(iii) Which of the following communication medium, will you suggest to be procured by the company for connecting their local offices in New Delhi for very effective and fast communication?

- Ethernet Cable
- Optical Fiber
- Telephone Cable

(iv) Suggest a cable/wiring layout for connecting the company's local offices located in New Delhi.
