PRACTICE PAPER–1(TERM-2)

XII-COMPUTER SCIENCE (083)

Time allowed: 2 hours

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.

(SECTION A)
Each question carries 2 marks

Q1. **Give any two characteristics of queues.** (2)

Ans. Characteristics of queues:
- It is a FIFO data structure
- The insertion takes place at the end and using append() and deletion takes place from the first/beginning of the queue using pop(0).

Q2. **(i) Expand the following:** (1)

   `PPP , POP3`

   (ii) Out of the following, which is the fastest wired and wireless medium of transmission? (1)

   `Twisted Pair Cable, Coaxial cable, optical fibre, Radio wave,`

   `Ethernet cable.`

Ans. (i) Point to Point Protocol, Post Office Protocol 3

   (ii) fastest wired Transmission medium: **optical fibre**

   Fastest wireless Transmission medium : **Radio wave**

Q3. **Name 4 Data types used to store Numeric data in Databases?** (1)

Ans. INT/INTEGER, SMALLINT, DEC/DECIMAL, FLOAT

Q4. **A resultset is extracted from the Customer table using the cursor object (that has been already created) by giving the following statement.**

   Rec_Data=cursor.fetchall()

   (a) How many records of the table will be returned by fetchall() method?

   (b) What will be the datatype of Rec_Data object after the given command is executed?

Ans. (a) In case the table has records then all the records will be returned as a list of tuples, otherwise it will return an empty list.

   (b) List of tuples

Q5. **Write the output of the queries (a) to (d) based on the table Sportstars, given below:** (2)

Table: Sportstars

Admn_No	Name	DOB	Sport	Medals	Class
V1237	Vanshika	2005-02-19	Tennis	3	11
S1432	Ruhaani	2005-09-11	Football	5	12
SM1781	Aalam	2005-07-01	Cricket	4	11
V1935	Manan	2005-04-07	Football	6	11
S1276	Aarav	2005-10-06	Tennis	4	12
SM1872	Rehaan	2004-12-11	Football	3	12

a) **SELECT COUNT(*) FROM Sportstars WHERE Medals>=4;**
b) **SELECT SUM(Medals) FROM Sportstars WHERE Class=12;**
c) **SELECT MAX(DOB) FROM Sportstars;**
d) **SELECT DOB FROM Sportstars WHERE Admn_No LIKE "SM%"**

Ans.   a)   4   b) 12   c) 20051006   d)

2005-07-01
2004-12-11

Q6. **(i)** **Which command deletes an entire table, a view of a table or other objects in the database?** (1)
(ii) **What are SQL Joins?** (1)

Ans.   (i)   DROP TABLE tablename
(ii)   The SQL Joins are used to combine records from two or more tables in a database. A JOIN is a means for combining fields from two tables by using values common to each.

Q7. **Consider the Table Customers given below:** (2)

ID	Name	Age	City	Salary
1	Kashika	37	Jammu	80000.00
2	Anupriya	35	Shimla	75000.00
3	Vijayan	36	Hyderabad	65000.00
4	Krishnan	35	Chennai	55000.00
5	Harsh	37	Gandhinagar	85000.00
6	Raisa	32	Mumbai	45000.00
8	Clifford	36	Chennai	65000.00
9	Jaisha	36	Mumbai	85000.00
10	Aseem	37	Hyderabad	75000.00
11	Shona	35	Hyderabad	65000.00
12	Manan	38	Jammu	60000.00

(a)   Identify the degree and cardinality of the table.

(b)   Which field should be made the primary key? Justify your answer.

Ans.   (a) Degree: 5 Cardinality: 11

(b) The field ID should be made the primary key as it uniquely identifies each record of the table.

SECTION – B
Each question carries 3 marks

Q.8 Write a function in Python ENQ(Evenlist), where Evenlist is a list of numbers, from which we will enqueue all the even numbers into a queue implemented by using a list. Display the queue if it has at least one element, otherwise display appropriate error message. (3)

Ans.
```
def ENQ(Evenlist):
    qlist=[]
    for element in Evenlist:
        if element%2==0:
            qlist.append(element)
    if len(qlist)>0:
        return qlist
    else:
        return "Underflow Error:Stack is Empty"
```

Q9. (i)   A table, `SPORTSTARS` has been created in a database with the following fields: (3)
`Admn_No, Name, DOB, Sport, Medals, Class`
Give the SQL command to rename the field Class to Grade in this table.

(ii) Which of the following is a DDL command?
`DELETE FROM, DROP TABLE, CREATE TABLE, INSERT INTO`

Ans.   (i)   ALTER TABLE sportstars RENAME COLUMN Class TO Grade;

(ii)   DDL: DROP TABLE, CREATE TABLE

Q10.   Golden Tulips is using MySQL to create a database called STUDENTDETAILS with a table Student which the following structure. Write the SQL commands for doing the same. (3)

Field	Data Type	Remarks	NULL
StudentID	char(10)	Primary Key	NO
NAME	varchar(30)		NO
DOB	date		NO
CITY	varchar(30)		YES
MARKS	int		YES
Email	varchar(30)		YES

Ans.   The SQL commands are:
```
CREATE DATABASE STUDENTDETAILS;
CREATE TABLE Student(StudentID CHAR(10) PRIMARY KEY,NAME VARCHAR(30)
NOT NULL,DOB date NOT NULL, CITY VARCHAR(30),MARKS INTEGER);
```

(SECTION C)
Each question carries 4 marks

Q11. Write SQL commands for the queries (a)-(d) based on the two tables TAXITYPE and TRAVEL   (4)

TABLE: TAXITYPE

TAXI_CODE	TAXITYPE	PERKM
T01	TEMPO TRAVELLER	40
T02	AC INNOVA	20
T03	AC ERTIGA	15
T04	AC HATCHBACK	10
T05	AC SEDAN	10

TABLE: TRAVEL

CNO	CNAME	TRAVELDATE	KM	TAXI_CODE	NOP
101	Randeep Singh	2018-11-07	200	T01	12
102	Sharad Bali	2018-12-21	120	T04	4
105	Sangeeta M	2019-04-25	450	T01	15
103	Manish Nagpal	2019-01-29	280	T02	5
107	Veronica Masih	2019-03-12	365	T04	2
104	Dinesh Hoon	2019-10-28	290	T05	4
106	Ramita Malik	2019-04-06	100	T01	20

a) To display CNO, CNAME, TRAVELDATE from the table TRAVEL in descending order of CNO.

b) To display the CNAME of all customers from the table TRAVEL who are travelling by vehicle with code T01 or T02

c) To display the CNO and CNAME of those customers from the table TRAVEL who travelled between '2019-01-06' and '2019-05-01'.

d) To display all the details from table TRAVEL for the customers, who have travel distance more than 250 KM in ascending order of NOP (Number of Passengers)

Ans.   a)   SELECT CNO, CNAME, TRAVELDATE FROM TRAVEL ORDER BY CNO DESC;

b)   SELECT CNAME FROM TRAVEL WHERE TAXI_CODE= 'T01' OR TAXI_CODE = 'T02';

OR

SELECT CNAME FROM TRAVEL TAXI_CODE IN ('T01', 'T02');

c) SELECT CNO, CNAME from TRAVEL WHERE TRAVELDATE >='2019 - 01 - 06' AND

TRAVELDATE<='2019-05-01';

<div align="center">OR</div>

SELECT CNO, CNAME FROM TRAVEL. WHERE TRAVEL DATE BETWEEN '2019-01-06'   AND
2019-05-01':

d) SELECT* FROM TRAVEL WHERE KM >250 ORDER BY NOP;

(4)

Q12. (i) Give two advantages and two disadvantages of bus topology

<div align="center">**OR**</div>

Define the following terms:
Bandwidth, IP address

(ii) How are Radio Waves and Microwaves different?

Ans. (i)

<div align="center">**Bus Topology**</div>

| Advantages	Disadvantages
1. Easy to install and is used for small networks. 2. Media requirements low. 3. One node failing does not affect the network functioning.	1. Fails if central line fails. 2. Single communication channel can slow down the access time. 3. High network traffic can slow down the speed.

<div align="center">**OR**</div>

Bandwidth: The amount of data that can be transferred over a network in a specific amount of time is termed as Bandwidth. It is expressed as a bitrate and measured in bits per second (bps), Mbps and Gbps.

IP address (internet protocol address) is a standard numerical representation that uniquely identifies a specific interface on the network. An IP address is, generally represented as 4 octets of numbers from 0-255. The IP address has two parts- the network part and the host part. The first part of the IP address represents the network and the rest will specify the host including the individual device.

(ii)

Radio Waves	Microwaves
Frequency range of Radio Waves is 3 KHz and 1 GHz	Frequency range of Microwaves is 1 GHz to 300 Ghz
These are Omni- directional	These are Uni- directional
Used for Broadcast and one-to-one communication	Used for one-to-one communication between sender and receiver.

Q13. Ishana Electronics Company headquaters has four blocks of buildings as shown: (4)
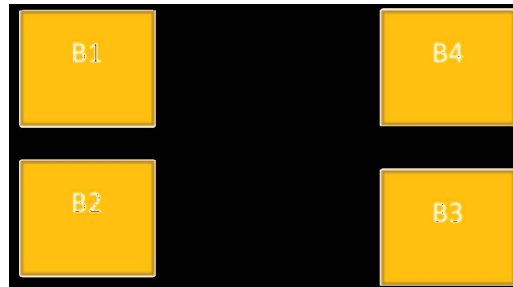
Center to center distance between various blocks

B3 TO B1-50 M	B1 TO B2-60 M	B2 TO B4-25 M
B4 TO B3-170 M	B3 TO B2-125 M	B1 TO B4-90 M

Number of computers in each block :

B1-150	B2-15
B3-15	B4-25

The computers in each block are already networked, however the company now wants to connect the blocks.

i. Suggest the most appropriate topology for the connections between the blocks.
   a. Ring topology   b. Star topology
   c. Mesh topology   d. Bus topology

ii. The company wants internet accessibility in all the blocks. The suitable and cost-effective technology for that would be:
   a. Satellite   b. Lease line
   c. Telephone line   d. Broadband

iii. The company is planning to link its head office situated in New Delhi with the offices in hilly areas. Suggest a way to connect it economically:
   a. Micro waves   b. Coaxial cable
   c. Fibre optic   d. Radio waves

iv. Suggest the most appropriate location of the server and why?
   a. BLOCK B2   b. BLOCK B1
   c. BLOCK B4   d. BLOCK B3

Ans. (i)   b. Star topology   (ii) Telephone line
   (iii) d. Radio waves   (iv) b. BLOCK B1 since it has the maximum number of
                                          computers.