

MARKING SCHEME

SAMPLE PAPER -2

COMPUTER SCIENCE (083) - XII

TERM - 2

Maximum Marks: 35

Time: 2 hours

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. Write the name of the operations that can be applied on stacks. Also write the name of functions that are used to perform the task. 2

Ans. In stack, inserting an element is known as Pushing which is done by append() function and deleting an element is known as Popping which is accomplished by pop() or del function.

Q2. (i) Expand the following: 1

HTML, URL

(ii) Which is the transmission medium for TV remotes? 1

Infrared, Coaxial cable, Optical fibre, Microwave, Ethernet cable.

Ans. (i) Hyper Text Markup Language, Uniform Resource Locator

(ii) Infrared

Q3. (i) Which constraint specifies the values in the column must be unique? 1

(ii) Which constraint specified with a column uniquely identifies each row in a table? 1

Ans. (i) UNIQUE (ii) PRIMARY KEY

Q4. (i) Which method returns the next row from the result set as tuple? 1

(ii) How can one create a cursor object? Which property can be used to output the number of rows resulting from the SQL Query? 1

Ans.

(i) `fetchone()` returns the next row from the result set as tuple. If there are no more rows to retrieve, None is returned.

(ii) You can create cursor object using the `cursor()` method of the Connection object/class. The `rowcount` property is used to output the number of rows resulted from the SQL query.

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

2

Item_Id	Item_Name	Item_Brand	GST	Price	Unit
1001	Milk	Verka	Cat1	25	litre
1002	Curd	Verka	Cat1	50	kg
1003	Lassi	Verka	Cat1	30	litre
1004	Chaac	Amul	Cat1	20	litre
1005	Unpacked Paneer	None	Cat1	100	kg
1006	Eggs	None	Cat2	48	dozen
1007	Gur	None	Cat3	40	kg
1008	Honey	None	Cat3	200	litre
1009	Salt	Tata	Cat4	21	kg
1010	Sugar	None	Cat7	60	kg
1011	Tea	Tata	Cat8	370	kg
1012	Edible Oils	Various Brands	Cat13	100	litre
1013	Roasted Coffee Beans	Bru	Cat8	100	kg

a) `SELECT Sum(Price) FROM store_items WHERE GST in ("Cat1", "Cat2");`

b) `SELECT count(Distinct Item_Brand) FROM store_items;`

c) `SELECT Item_Name FROM store_items where Unit Like "d%";`

d) `SELECT * FROM store_items WHERE Price>=200 AND Item_Brand!="None";`

Ans. a) 273

b) 6

c) Eggs

1011	Tea	Tata	Cat8	370	kg
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d)

Q6. (i) Which clause aggregates the base data? 1

Which clause filters the aggregated data?

(ii) Give one point of difference between an equi-join and a natural join. 1

Ans: i) Group By and Having

ii) Equi- join:

- The join in which columns from two tables are compared for equality
- Duplicate columns are shown

Natural Join

- The join in which only one of the identical columns existing in both tables is present
- No duplication of columns

Q7. i) Consider the table Employee with the following records: 2

Table: Employee

ECODE	NAME	DESIG	SGRADE	DOJ	DOB
101	Sneha Bhardwaj	EXECUTIVE	S01	2003-03-23	1980-01-13
102	Ravi Chander	HEAD-IT	S02	2010-02-12	1987-07-22
103	Sunita Kumari	RECEPTIONIST	S03	2009-06-20	1983-02-24
108	Ravi Kumar	GM	S04	2006-08-11	1984-03-03
107	Priyam Sen	Head-IT	S05	2004-12-29	1984-03-03

(a) In table Employee, identify which of the two columns are uniquely identified each row? Which key can be made with these columns?

(b) What is the cardinality and degree of the Employee table?

OR

ii) Consider the table Salary and answer the following questions:

SNO	SGRADE	SALARY
1	S01	28000
2	S02	45000
3	S03	25000
4	S04	90000
5	S05	50000

(a) How can we access records from both the tables Employee and Salary?

(b) How many rows and columns will be there after the cartesian product of these two tables?

Ans. (a) In the table Employee, the columns which are uniquely identified and each row are ECODE and SGRADE. These columns can be made the Primary key of the table.

(b) The cardinality of the table is 5 and the degree of the table is 6.

OR

(a) We can access records from both tables by creating a Foreign key that can join both tables through common columns.

(b) The rows will be $5 * 5 = 25$ and columns will be $6 + 3 = 9$ after the cartesian product of two tables.

Section – B

Each question carries 3 marks

Q8. Coach Abhishek stores the races and participants in a dictionary. Write a program, with separate user defined functions to perform the following operations:

3

- Push the names of the participants of the dictionary onto a stack, where the distance is more than 100.
- Pop and display the content of the stack. For example:

If the sample content of the dictionary is as follows:

Races = {100:'Varun', 200 : 'Javed', 400:'Kabeer', 800:'Mitra'}

The output from the program should be:

Mitra Kabeer Javed

OR

A linear stack called status contains the following information :

- (i) Phone number of Employee
- (ii) Name of Employee

Write the following methods to perform given operations on the stack status :

- (i) **Push_element ()** To Push an object containing Phone number of Employee and Name of Employee into the stack.
- (ii) **Pop_element ()** To Pop an object from the stack and to release the memory.

Ans. Races = {100:'Varun', 200:'Javed', 400:'Kabeer', 800:'Mitra'}

```
def PUSH(Stk,N):
    Stk.append(N)
def POP(Stk):
    if Stk!=[]:
        return Stk.pop()
    else:
```

```

        return None
stack1=[ ]
for i in Races:
    if i>=200:
        PUSH(stack1,Races[i])
while True:
    if stack1!=[ ]:
        print(POP(stack1),end=" ")
    else:
        break

```

OR

(i) def Push_element (Status, Top) :

```

    phone_no = int (input ("Enter phone number:"))
    emp_name = input ("Enter employee name :")
    St = (phone_no, emp_name)
    Status.append (St)
    Top =Top + 1
    return Top

```

(ii) def Pop_element (Status, Top) :

```

    Slen = len (Status)
    if (Slen <= 0) :
        print ("Status is empty")
    else :
        phone_no, emp_name = Status. Pop ( )
        Top = Top - 1
        print("Phone number %s and name %s deleted" % (phone_no, emp_name))
    return Top

```

Q9. (i) A table Transport is created with the following columns:

1

Bus_No, Bus_route, Area, No_of_students, Helper_Name, Charges

Write an SQL command to increase the Bus charges by 12% for all students.

(ii) Write the category DDL, DML or DCL for the following commands

2

GRANT, DROP TABLE, INSERT INTO, UPDATE...SET, REVOKE

Ans:

(i) Update Transport Set Charges = Charges*0.12;

(ii)

DDL: DROP TABLE

DML: INSERT INTO, UPDATE ..SET

DCL: GRANT, REVOKE

Q10. Sahil wants to create a database **HARDWARE** which has a table **RENTAL**. He wants to make sure that city name is unique and no field is left empty in the table. Write the SQL commands for the fields given below.

3

RENTAL_ID	INT	PRIMARY KEY
RENTAL_DATE	DATETIME	NOT NULL
INVENTORY_ID	VARCHAR(6)	NOT NULL
CUSTOMER_ID	VARCHAR(6)	NOT NULL
RETURN_DATE	DATETIME	NOT NULL
CITY	VARCHAR(6)	UNIQUE NOT NULL

ANS: CREATE DATABASE HARDDWARE;

CREATE TABLE RENTAL (

```
RENTAL_ID    INT PRIMARY KEY,
RENTAL_DATE DATE NOT NULL,
INVENTORY_ID VARCHAR(6) NOT NULL,
CUSTOMER_ID VARCHAR(6) NOT NULL,
RETURN_DATE DATE NOT NULL,
CITY VARCHAR(6)    NOT NULL UNIQUE
);
```

Section C

Each question carries 4 marks

Q11. A database called ecompany has two tables COMPANY and CUSTOMER with the following records.

Write SQL commands for the queries (a)-(d) based on the two tables COMPANY and CUSTOMER

4

TABLE: COMPANY

PID	NAME	CITY	PRODUCTNAME
2101	APPLE	DELHI	WATCH
2102	SAMSUNG	BANGALORE	MOBILE
2103	PANASONIC	DELHI	TV
2104	SONY	MUMBAI	MOBILE
2105	LENOVO	INDORE	TABLET
2106	DELL	MUMBAI	LAPTOP

TABLE: COUSTMER

CUSTID	NAME	UNITPRICE	QTY	PID
101	REENA SONI	60,000	10	2102
102	MICHAEL PAUL	50,000	20	2106
103	MEETALI SINGH	70,000	15	2101
104	PARUL SOHAL	55,000	3	2103
105	RAJESH DESWAL	45,000	7	2104

- a) Write an SQL statement to display the name of the companies in reverse alphabetical order.
- b) To add one more column to the table customer called TOTAL_PRICE which can have up to two decimal places.
- c) Write an SQL statement to count the products city wise.
- d) Write an SQL statement to display the customer name, product of the unit price and quantity, product name where the name of the city is Mumbai.

Ans:

- a) SELECT NAME FROM COMPANY ORDER BY NAME DESC;
- b) ALTER TABLE CUSTOMER ADD TOTAL_PRICE DECIMAL(10,2);
- c) SELECT COUNT(*), CITY FROM COMPANY GROUP BY CITY;
- d) SELECT CUSTOMER.NAME, UNITPRICE*QTY, PRODUCTNAME FROM COMPANY, CUSTOMER WHERE COMPANY.PID=CUSTOMER.PID AND CITY= 'MUMBAI';

Q12. (i) What is of Network? What is the geographical scope of LAN, MAN and WAN? 2

OR

What do you understand by HTTP? How is it related to World Wide Web.

(ii) How is a Gateway different from a Switch? 2

Ans: (i) A network is an interconnected collection of autonomous computers that can share and exchange information.

Local area network (LAN): these are computer networks confined to a localised area such as an office or a factory or house.

Metropolitan Area Networks (MAN): these are the networks that link computer facilities within a city.

Wide area networks (WAN): these are the networks that it is spread over large distances say across countries or even continents. it can even include a group of LANs connected together.

OR

Wide area networks(WAN): these are the networks that it is spread over large distances say across countries or even continents. it can even include a group of LANs connected together.

The World Wide Web is an internet system i.e., a set of programs, standards, and protocols that allows multimedia files to be created, displayed and linked on the internet.

before www, the internet was mainly used for obtaining textual information. the others server on the Internet: FTP, Gopher, mail, news etc. cater to text information but www, which use an HTTP server, caters to multimedia information. thus, it enables the user to receive hypertext that is multimedia information on their web browsers.

ii) **Gateway:** A gateway, as the name suggests, is a Passage to connect two networks together that may work upon different networking models. they basically work as the Messenger agents that take data from one system, interpret it and transfer it to another system.

Switch: It is a device used to segment networks into different subnetworks, called subnets or LAN segments. This prevents traffic overloading. Switches are responsible for filtering, i.e. transforming data in a specific way and forwarding packets.

Q13. Learnpython4cbse Academy has four wings A, B, C, D

4

Distance between various wings are given below:

Wing A to Wing B-100m

Wing A to Wing C-200m

Wing A to Wing D-400m

Wing B to Wing C-300m

Wing B to Wing D-100m

Wing C to Wing D-450m

Number of Computers installed at various wings are as follows:

Wing A-20

Wing B-150

Wing C-50

Wing D-25

(i) Suggest the best wired medium and the cable layout to efficiently connect various wings of Learnpython4cbse Academy.

(ii) Name the most suitable wing where the Server should be installed. Justify your answer.

(iii) Suggest a device/software and its placement that would provide data security for the Academy.

(iv) What will be needed to provide wireless Internet access to all smartphone/laptop users in the Academy.

Ans. (i) Optic Fibre and Star Topology.

(ii) Wing B as it has the maximum number of computers

(iii) Firewall with the server in Wing B.

(iv) A High bandwidth Broadband Connection and Wi-Fi Router.