



नवोदय विद्यालय समिति
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प्रथम पूर्व-सत्रीय परीक्षा -2022-23
FIRST PRE-BOARD EXAMINATION -2022-23
COMPUTER SCIENCE (083)- (THEORY)
Class: XII

Maximum Marks: 70

Time Allowed: 3 hours

SET-I

General Instructions:

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A has 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type questions carrying 02 marks each.
5. Section C has 05 Short Answer type questions carrying 03 marks each.
6. Section D has 03 Long Answer type questions carrying 05 marks each.
7. Section E has 02 questions carrying 04 marks each.
8. All programming questions are to be answered using Python Language only.

SECTION A

(1 mark to be awarded for every correct answer)

- | | | |
|---|---|-----|
| 1 | Which of the following is valid arithmetic operator in Python:
(i) // (ii) ? (iii) < (iv) and | 1 M |
| 2 | Sushma gets the current date and time as a string x. Its value is
"2021-10-30 12:49:44.216062". Sushma prints the value of x[11:16] and gets
"12:49". Which of these will contain the date in yyyy-mm-dd format?
a. x[0:9]
b. x[0:10]
c. x[1:10]
d. x[1:11] | 1 M |

- 3 Which of these Python data structures cannot have duplicate items and does not support ordering? 1 M
- a. list
 - b. tuple
 - c. dictionary
 - d. set
- 4 Consider a list `a=[34,35,26,78,90,[12,13,14],[5,6,7],29,45]` 1 M
- What is the output of `a[-4][-2]`?
- a.90
 - b.5
 - c.13
 - d.12
- 5 Consider a list `b=[90,85,89,78,3,5]` 1 M
- `b.insert(-1,7)`
- `print(b)`
- a. `[90,85,89,78,3,5,7]`
 - b. `[90,85,89,78,3,7,5]`
 - c. `[90,7,85,89,78,3,5]`
 - d. `[7,90,85,89,78,3,5]`
- 6 Which output lines of the following program will print the same results? 1 M
- ```
tup1 = (10, 20, 30, 40, 50, 60, 70, 80, 90)
print(tup1[5:-1]) # 1
print(tup1[5]) # 2
print(tup1[5:]) # 3
print(tup1[-4:8]) # 4
```
- a. (1) and (2)
  - b. (1) and (4)
  - c. (2) and (3)
  - d. (1), (3) and (4)
- 7 Ms. Hetvee is working on a string program. She wants to display last four characters of a string object named `s`. Which of the following is statement is true? 1 M
- a. `s[4:]`
  - b. `s[:4]`

- c. s[-4:]  
d. s[:-4]
- 8 Which of the following mode in file opening statement results or generates an error if the file does not exist? 1 M  
(a) a+ (b) r+ (c) w+ (d) None of the above
- 9 A file customer.txt has been created. Now Which of the following function(s) can be used to open the file in only reading mode? 1 M  
i) f=open("customer.txt",'r')  
ii) f=open("customer.txt",'r+')  
iii) f=open("customer.txt")  
iv) f=open("customer.txt",'rb')
- a) i and iii only  
b) i, ii and iii  
c) ii and iii  
d) iv only
- 10 Table Employee has 4 records and 3 attributes and Table Dept has 3 records and 4 attributes in it. Mr. Jain wants to display all information stored in both of these related tables. He forgot to specify equi-join condition in the query. What will be the degree and cardinality of the resultant table ? 1 M  
a) Degree 12 and Cardinality 4  
b) Degree 12 and Cardinality 3  
c) Degree 12 and Cardinality 7  
d) Degree 7 and Cardinality 12
- 11 The RDBMS terminology for a row is 1 M  
(a) Tuple (b) relation (c) attribute (d) degree
- 12 With SQL, how do you select all the records from a table named "Persons" where the value of the column "FirstName" ends with an "a"? 1 M  
a) SELECT \* FROM Persons WHERE FirstName='a'  
b) SELECT \* FROM Persons WHERE FirstName LIKE 'a%'  
c) SELECT \* FROM Persons WHERE FirstName LIKE '%a'  
d) SELECT \* FROM Persons WHERE FirstName='%a%'

- 13 What does the ALTER TABLE clause do? 1 M
- a) The SQL ALTER TABLE clause modifies a table definition by altering, adding, or deleting table columns and/or constraints
  - b) The SQL ALTER TABLE clause is used to insert data into database table
  - c) THE SQL ALTER TABLE deletes data from database table
  - d) The SQL ALTER TABLE clause is used to delete a database table
- 14 Which of the following command is used to change the rows that already exist in a table? 1 M
- a) Insert.
  - b) Union.
  - c) Update.
  - d) Select
- 15 Fill in the blank: 1 M
- \_\_\_\_\_ is a non-key attribute, whose values are derived from the primary key of some other table.
- (a) Primary Key
  - (b) Foreign Key
  - (c) Candidate Key
  - (d) Alternate Key
- 16 FTP stand for\_\_\_\_\_ 1 M
- a) Foreign Transfer protocol
  - b) Fiber Tech Protocol
  - c) Fiber Transfer Protocol
  - d) File Transfer Protocol

Q.No. 17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as

- (a) Both A and R are true and R is the correct explanation for A
- (b) Both A and R are true and R is not the correct explanation for A
- (c) A is True but R is False
- (d) A is false but R is True

17 Assertion A :An existing file is opened in the write mode the previous data will be erased. 1 M  
Reasoning R: When the existing file is opened in write mode the file object will be positioned at the end of the file.

18 Assertion A: Stack is a **linear data structure which follows a particular order in which the operations are performed**. The order may be LIFO(Last In First Out) . 1 M  
Reasoning R: When we put data in a Stack, it processes the last entry first .

### SECTION B

19 Rewrite the following code in python after removing all syntax error(s). 2 M  
Underline each correction done in the code.

```
30=To
for K in range(0,To)
IF k%4==0:
 print (K*4)
Else:
 print (K+3)
```

20 Write two points of difference between hub and switch. 2 M  
OR

Write two points of difference between star and bus topology.

21 Write the output of the following: 2 M  
L=[ ]  
L1 = [ ]  
for i in range (16,10):  
 L.append(i)  
for i in range (20,4,-2):  
 L1.append(i)  
print("L = ", L)  
print("L1 = ",L1)

22 Define the term cardinality and degree. 2 M

23 (a) Write the full forms of the following: 2 M  
(i) ARPANET (ii) SMTP  
(b) What is NIC? Give other name of NIC.

24 Find the output of the following code:

2 M

```
Name="PythoN3.1"
R=""
for x in range(len(Name)):
 if Name[x].isupper():
 R=R+Name[x].lower()
 elif Name[x].islower():
 R=R+Name[x].upper()
 elif Name[x].isdigit():
 R=R+Name[x-1]
 else:
 R=R+"#"
print(R)
```

OR

Predict the output of the Python code given below:

```
tuple1 = (11, 22, 33, 44, 55 ,66)
list1 =list(tuple1)
new_list = []
for i in list1:
 if i%2==0:
 new_list.append(i)
new_tuple = tuple(new_list)
print(new_tuple)
```

25 How is ALTER TABLE statement different from UPDATE statement?

2 M

OR

Write the UPDATE command to increase the commission (Column name : COMM) by 500 of all the Salesmen who have achieved Sales (Column name : SALES) more than 200000. The table's name is COMPANY.

**SECTION C**

26 (a) Consider the following tables –Foods and Company

3 M

**Table: Foods**

| ITEM-ID | ITEMNAME   | COMPANY_ID |
|---------|------------|------------|
| 1       | CHEK MIX   | 16         |
| 2       | CHEESE-IT  | 15         |
| 6       | BN-BISCUTT | 15         |
| 4       | POTRICE    | 15         |

**Table: Company**

| ITEMID | COMPANYNAME |
|--------|-------------|
| 15     | JACK JILL   |
| 16     | AKAS FOOD   |
| 17     | FOODIES     |
| 19     | SIP N BITE  |

What will be the output of the following statement?

```
SELECT * FROM Foods NATURAL JOIN Company;
```

(b) Write the output for the queries (i) to (iv) based on the tables, EMPLOYEE and DEPT given below:

Table : EMPLOYEE

| ENO  | NAME   | DOJ        | DOB        | GENDER | DCODE |
|------|--------|------------|------------|--------|-------|
| 1111 | MISKA  | 2020/03/01 | 1997/11/15 | F      | 10    |
| 1112 | AKSHAY | 2018/06/05 | 1998/12/04 | M      | 20    |
| 1113 | NEEL   | 2021/07/01 | 2000/10/20 | M      | 10    |
| 1114 | ANKITA | 2016/04/25 | 2001/10/27 | F      | 30    |
| 1115 | MOHIT  | 2016/12/22 | 2003/11/02 | M      | 40    |

Table: DEPT

| DCODE | DEPARTMENT  | LOCATION  |
|-------|-------------|-----------|
| 10    | AGRICULTURE | ANAND     |
| 20    | MINES       | NADIAD    |
| 30    | TPP         | KHEDA     |
| 40    | MECHANICAL  | AHMEDABAD |

- a. SELECT COUNT(\*),DCODE FROM EMPLOYEE GROUP BY DCODE  
HAVING COUNT(\*)>1;
- b. SELECT DISTINCT DEPARTMENT FROM DEPT;
- c. SELECT NAME,DEPARTMENT FROM EMPLOYEE E,DEPT D WHERE  
E.DCODE=D.DCODE AND ENO<1113
- d. SELECT MAX(DOJ), MIN(DOB) FROM EMPLOYEE;

27

3 M

Write a function in Python to read lines from a text file "notes.txt". Your function should find and display the occurrence of the word "the".

For example: If the content of the file is:

"India is the fastest-growing economy. India is looking for more investments around the globe. The whole world is looking at India as a great market. Most of the Indians can foresee the heights that India is capable of reaching."

The output should be 5

**OR**

Write a function display\_words() in python to read lines from a text file "story.txt", and display those words, which are less than 4 characters.

28 Consider the tables given below:

2+1

**Table – Faculty**

M

| TEACHERID | NAME     | ADDRESS   | STATE       | PHONENUMBER |
|-----------|----------|-----------|-------------|-------------|
| T001      | Avinash  | Ahmedabad | Gujarat     | 9825741256  |
| T002      | Akhilesh | Jaipur    | Rajasthan   | 9824456321  |
| T003      | Shivansh | Mumbai    | Maharashtra | 9327045896  |
| T004      | Minaxi   | New Delhi | Delhi       | 9012547863  |

**TABLE: COURSE**

| COURSEID | SUBJECT               | TEACHERID | FEE  |
|----------|-----------------------|-----------|------|
| 1001     | Computer Science      | T001      | 6750 |
| 1002     | Informatics Practices | T004      | 4550 |

With reference to the above given tables, write OUTPUT for the queries for (i) to (iv) and write QUERY for (v) :

(i) SELECT COURSEID, TEACHERID, NAME, PHONENUMBER FROM COURSE C, FACULTY F WHERE C.TEACHERID=F.TEACHERID AND ADDRESS LIKE '%DELHI%'; ( ½ mark)

(ii) SELECT TEACHERID, NAME, SUBJECT FROM COURSE C, FACULTY F WHERE C.TEACHERID=F.TEACHERID AND NAME LIKE 'S%'; ( ½ mark)

(iii) SELECT COURSEID, SUBJECT,TEACHERID,NAME,PHONENUMBER FROM FACULTY,COURSE WHERE FACULTY.TEACHERID = COURSE.TEACHERID AND FEE>=5000; ( ½ mark)

(iv) UPDATE COURSE SET SUBJECT='CS' WHERE COURSEID=1001; ( ½ mark)

(v)Write the command to view all databases. ( 1 mark)

29

3 M

Write a function LShift(Arr,n) in Python, which accepts a list Arr of numbers and n is a numeric value by which all elements of the list are shifted to left. Sample Input Data of the list Arr= [ 10,20,30,40,12,11], n=2 Output Arr = [30,40,12,11,10,20]

30

Vedika has created a dictionary containing names and marks as key-value pairs of 5 students. Write a program, with separate user-defined functions to perform the following operations:

3 M

1. Push the keys (name of the student) of the dictionary into a stack, where the corresponding value (marks) is greater than 70.
2. Pop and display the content of the stack.

The dictionary should be as follows:

`d={"Ramesh":58, "Umesh":78, "Vishal":90, "Khushi":60, "Ishika":95}`

Then the output will be: Umesh Vishal Ishika

OR

Write functions `AddPlayer(player)` and `DeletePlayer(player)` in python to add and remove a player by considering them as push and pop operations in a stack.

### SECTION D

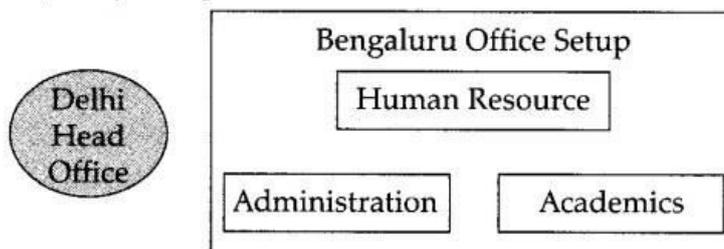
31

5 M

G.R.K International Inc. is planning to connect its Bengaluru Office Setup with its Head Office in Delhi. The Bengaluru Office G.R.K. international Inc. is spread across an area of approx. 1 square kilometer, consisting of 3 blocks – Human Resources, Academics and Administration.

You as a network expert have to suggest answers to the four queries (i) to (iv) raised by them.

Notes : Keep the distance between blocks and number of computers in each block in mind, while providing them the solutions.



**Shortest distances between various blocks:**

|                                             |         |
|---------------------------------------------|---------|
| Human Resources to Administration           | 100 m   |
| Human Resources to Academics                | 65 m    |
| Academics to Administration                 | 110 m   |
| Delhi Head Office to Bengaluru Office Setup | 2350 km |

**Number of computers installed at various blocks are as follows:**

| BLOCK             | No. of Computers |
|-------------------|------------------|
| Human Resources   | 155              |
| Administration    | 20               |
| Academics         | 100              |
| Delhi Head Office | 20               |

- Suggest the most suitable block in the Bengaluru Office Setup, to host the server. Give a suitable reason with your suggestion.
- Suggest the cable layout among the various blocks within the Bengaluru Office Setup for connecting the Blocks.
- Suggest a suitable networking device to be installed in each of the blocks essentially required for connecting computers inside the blocks with fast and efficient connectivity.
- Suggest the most suitable media to provide secure, fast and reliable data connectivity between Delhi Head Office and the Bengaluru Office Setup.
- Suggest a device/software to be installed in the Bengaluru Campus to take care of data security.

- 32 What are the possible outcome(s) executed from the following code? Also, specify the maximum and import random. 2+3  
M

```
PICK=random.randint (0,3)
CITY= ["DELHI", "MUMBAI", "CHENNAI", "KOLKATA"];
for I in CITY :
 for J in range (1, PICK):
 print (I, end = " ")
 print ()
```

(i)  
DELHIDELHI  
MUMBAIMUMBAI  
CHENNAICHENNAI  
KOLKATAKOLKATA

(iii)  
DELHI  
MUMBAI  
CHENNAI  
KOLKATA

(ii)  
DELHI  
DELHIMUMBAI  
DELHIMUMBAICEHNNAI

(iv)  
DELHI  
MUMBAIMUMBAI  
KOLKATAKOLKATAKOLKATA

b. 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()
```

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

(ii) What will be the datatype of Rec\_Data object after the given command is executed?

OR

a. Find and write the output of the following python code:

```
a=10
def call():
 global a
 a=15
 b=20
 print(a)
call()
```

b. Consider the table : IPL2022 in which Tina wants to fetch rows. For this she wrote a program in which some code is missing. Help her to complete the following code.

```

import _____ as ms #line1
cn=ms.connect(host='localhost',user='root',passwd='root',database='IPL')
cr=_____ #line2
cr._____("select * from IPL2022") #line3
r=cr.fetchall()
for i in r:
 print(i)
cn.close()

```

33

3 M

a. Write a program to write into file “one.csv” with Rollno, Name and Marks separated by comma. It should have header row and then take in input from the user for all following rows. The format of the file should be as shown if user enters 2 records.

Roll.No,Name,Marks

20,ronit,67

56,nihir,69

b. What is the difference between writer object’s writerow() and writerows() function?

2 M

**OR**

a. Write a program to read all content of “student.csv” and display records of only those students who scored more than 80 marks. Records stored in students is in format : Rollno, Name, Marks.

3 M

b. What is full form of CSV? Write two advantages.

2 M

### SECTION E

34

Consider the following tables Supplier and Consumer. Write SQL commands for the statements (a) to (d).

4 M

**Supplier**

| SupplierID | SupplierName  | SupplierAddress   | Suppliercity |
|------------|---------------|-------------------|--------------|
| JR01       | Rohit Bhalla  | 14, Floret Appt   | Jaipur       |
| PH02       | Harish Nagar  | A3, Gandhi Lane   | Panjim       |
| PS15       | Subrat Ray    | 14/B, Surya Vihar | Panjim       |
| JT50       | Tina Chandran | 12-H, Bank Colony | Jaipur       |

**Consumer**

| C ID | SupplierID | CName        | CAddress          | Ccity  |
|------|------------|--------------|-------------------|--------|
| C101 | JR01       | Varun Mishra | 5, Central Avenue | Delhi  |
| C342 | PH02       | Sonia Singh  | 116, Block A      | Delhi  |
| C112 | JR01       | Prabhu S     | 2A, Andheri East  | Mumbai |
| C008 | PS15       | Abhishek Das | B5, CS Terminals  | Panjim |
| C035 | JT50       | Rahul Jain   | 13,B Mayur Vihar  | Mumbai |

- (a) To display the C\_ID, Supplier name, Supplier Address, Consumer Name and Consumer Address for every Consumer 1 M
- (b) To display Consumer details in ascending order of CName 1 M
- (c) To display number of Consumers from each city 1 M
- (d) To display the details of suppliers whose supplier city is 'Panjim' 1 M

OR

- a) Observe the following table Product and answer the parts(i) and(ii) accordingly

Table: Product

| ProNo | Name      | Qty | PurchaseDate |
|-------|-----------|-----|--------------|
| 101   | Pen       | 102 | 12-12-2022   |
| 102   | Pencil    | 201 | 21-02-2018   |
| 103   | Eraser    | 90  | 09-08-2010   |
| 109   | Sharpener | 70  | 31-08-2019   |
| 113   | Clips     | 100 | 12-12-2014   |

- (i) Write the names of most appropriate columns, which can be considered as candidate keys. 1 M
- (ii) What is the degree and cardinality of the above table? 1 M
- b) Table Employee has 4 records and Table Dept has 3 records in it. Mr. Jain wants to display all information stored in both of these related tables. He 1 M

forgot to specify equi-join condition in the query. How many rows will get displayed on execution of this query? 1 M

c) Surya, a student of class XI, created a table "RESULT". Grade is one of the column of this table. To find the details of students whose Grades have not been entered, he wrote the following MySQL query. which did not give the desired result. 1 M

```
SELECT*FROM Result WHERE Grade = "Null";
```

Help Surya to run the query by removing the errors from the query and write the correct Query

35 A binary file "Book.dat" has structure [ BookNo, Book\_Name, Author, Price ]. 4 M

- A user defined function CreateFile() is created to input data for a record and add to Book.dat .
- A function CountRec(Author) is created in Python which accepts the Author name as parameter and count and return number of books by the given Author are stored in the binary file "Book.dat"

Observe and complete the following code based on the requirement given above:

```
import _____ #statement 1
def createFile():
 fobj=open(_____) #statement 2
 BookNo=int(input("Book Number : "))
 Book_name=input("Name :")
 Author = input("Author: ")
 Price = int(input("Price : "))
 rec=[BookNo,Book_Name,Author,Price]
 pickle._____ #statement 3
 fobj.close()
```

```
def CountRec(Author):
 fobj=open("Book.dat","rb")
```

```
num = 0
try:
while True:
 rec=pickle._____ #statement 4
 if Author==rec[2]:
 num = num + 1
except:
 fobj.close()
return num
```

- i. Which module should be imported in the program? (Statement 1)
- ii. Write the correct statement required to open a file in corresponding mode.(Statement 2)
- iii. Write the correct statement to write records to the file 'Book.dat' .(statement 3)
- iv. Write the correct statement to read the data from the binary file 'Book.dat'.

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