Series &RQPS

Set-4

प्रश्न–पत्र कोड
Q.P. Code **91**

रोल नं.
Roll No.

Candidates must write the Q.P. Code on the title page of the answer-book.

COMPUTER SCIENCE

*Time allowed : **3** hours* *Maximum Marks : **70***

NOTE

(I) Please check that this question paper contains **15** printed pages.

(II) Please check that this question paper contains **35** questions.

(III) Q.P. Code given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.

(IV) **Please write down the serial number of the question in the answer-book before attempting it.**

(V) 15 minute time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the candidates will read the question paper only and will not write any answer on the answer-book during this period.

General Instructions :

(i) *Please check this question paper contains **35** questions.*

(ii) *The paper is divided into 5 Sections – A, B, C, D and E.*

(iii) ***Section A,** consists of **18** questions **(1** to **18)**. Each question carries **1** mark.*

(iv) ***Section B,** consists of **7** questions **(19** to **25)**. Each question carries **2** marks.*

(v) ***Section C,** consists of **5** questions **(26** to **30)**. Each question carries **3** marks.*

(vi) ***Section D,** consists of **2** questions **(31** to **32)**. Each question carries **4** marks.*

(vii) ***Section E,** consists of **3** questions **(33** to **35)**. Each question carries **5** marks.*

(viii) *All programming questions are to be answered using Python Language only.*

SECTION – A

1. State True or False : **1**

While defining a function in Python, the positional parameters in the function header must always be written after the default parameters.

2. The **SELECT** statement when combined with _____ clause, returns records without repetition. **1**

(a) **DISTINCT** (b) **DESCRIBE**

(c) **UNIQUE** (d) **NULL**

3. What will be the output of the following statement : **1**

```
print (16*5/4*2/5-8)
```

(a) `-3.33` (b) `6.0`

(c) `0.0` (d) `-13.33`

4. What possible output from the given options is expected to be displayed when the following Python code is executed ? **1**

```
import random
Signal = ['RED', 'YELLOW', 'GREEN']
for K in range(2, 0, -1) :
    R = random.randrange(K)
    print (Signal[R], end = '#')
```

(a) **YELLOW # RED #** (b) **RED # GREEN #**

(c) **GREEN # RED #** (d) **YELLOW # GREEN #**

5. In SQL, the aggregate function which will display the cardinality of the table is _____. 1

(a) `sum()` (b) `count(*)`

(c) `avg()` (d) `sum(*)`

6. Which protocol out of the following is used to send and receive emails over a computer network ? 1

(a) `PPP` (b) `HTTP`

(c) `FTP` (d) `SMTP`

7. Identify the invalid Python statement from the following : 1

(a) `d = dict()` (b) `e = {}`

(c) `f = []` (d) `g = dict{}`

8. Consider the statements given below and then choose the correct output from the given options : 1

```
myStr="MISSISSIPPI"
print(myStr[:4]+"#"+myStr[-5:])
```

(a) `MISSI#SIPPI` (b) `MISS#SIPPI`

(c) `MISS#IPPIS` (d) `MISSI#IPPIS`

9. Identify the statement from the following which will raise an error : 1

(a) `print("A"*3)` (b) `print(5*3)`

(c) `print("15" + 3)` (d) `print("15" + "13")`

10. Select the correct output of the following code : 1

```
event="G20 Presidency@2023"
L=event.split(' ')
print(L[::-2])
```

(a) `'G20'` (b) `['Presidency@2023']`

(c) `['G20']` (d) `'Presidency@2023'`

11. Which of the following options is the correct unit of measurement for network bandwidth ? 1

(a) **KB** (b) **Bit**

(c) **Hz** (d) **Km**

12. Observe the given Python code carefully : 1

```
a=20
def convert(a):
    b=20
    a=a+b

convert(10)
print(a)
```

Select the correct output from the given options :

(a) 10 (b) 20

(c) 30 (d) Error

13. State whether the following statement is True or False : 1

While handling exceptions in Python, name of the exception has to be compulsorily added with **except** clause.

14. Which of the following is not a DDL command in SQL ? 1

(a) **DROP** (b) **CREATE**

(c) **UPDATE** (d) **ALTER**

15. Fill in the blank : 1

_____ is a set of rules that needs to be followed by the communicating parties in order to have a successful and reliable data communication over a network.

16. Consider the following Python statement : 1

```
F=open('CONTENT.TXT')
```

Which of the following is an invalid statement in Python ?

(a) `F.seek(1,0)` (b) `F.seek(0,1)`

(c) `F.seek(0,-1)` (d) `F.seek(0,2)`

Q. **17** and **18** are ASSERTION (A) and REASONING (R) 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)** : CSV file is a human readable text file where each line has a number of fields, separated by comma or some other delimiter. 1

Reason (R) : `writerow()` method is used to write a single row in a CSV file.

18. **Assertion (A)** : The expression `"HELLO".sort()` in Python will give an error. 1

Reason (R) : `sort()` does not exist as a method/function for strings in Python.

SECTION – B

19. (A) (i) Expand the following terms : **1 + 1 = 2**

`XML, PPP`

(ii) Give one difference between circuit switching and packet switching.

OR

(B) (i) Define the term web hosting.

(ii) Name any two web browsers.

20. The code given below accepts five numbers and displays whether they are even or odd : **2**

Observe the following code carefully and rewrite it after removing all syntax and logical errors :

Underline all the corrections made.

```
def EvenOdd()
    for i in range(5):
        num=int(input("Enter a number")
        if num/2==0:
            print("Even")
        else:
        print("Odd")
EvenOdd()
```

21. (A) Write a user defined function in Python named **showGrades(S)** which takes the dictionary S as an argument. The dictionary, S contains **Name:[Eng,Math,Science]** as **key:value** pairs. The function displays the corresponding grade obtained by the students according to the following grading rules : **2**

Average of Eng,Math,Science	Grade
>=90	A
<90 but >=60	B
<60	C

For example : Consider the following dictionary

```
S={"AMIT":[92,86,64],"NAGMA":[65,42,43],"DAVID":[92,90,88]}
```

The output should be :

```
AMIT - B
NAGMA - C
DAVID - A
```

OR

(B) Write a user defined function in Python named **Puzzle(W,N)** which takes the argument **W** as an English word and **N** as an integer and returns the string where every N^{th} alphabet of the word **W** is replaced with an underscore ("_").

For example : if **W** contains the word **"TELEVISION"** and **N** is 3, then the function should return the string **"TE_EV_SI_N".** Likewise for the word **"TELEVISION"** if **N** is 4, then the function should return **"TEL_VIS_ON".**

22. Write the output displayed on execution of the following Python code : **2**

```
LS=["HIMALAYA", "NILGIRI", "ALASKA", "ALPS"]
D={}
for S in LS :
    if len(S)%4 == 0:
        D[S] = len(S)
for K in D :
    print(K,D[K], sep = "#")
```

23. (A) Write the Python statement for each of the following tasks using built-in functions/methods only : **1 + 1 = 2**

(i) To remove the item whose key is **"NISHA"** from a dictionary named **Students.**

For example, if the dictionary **Students** contains **{"ANITA":90, "NISHA":76, "ASHA":92},** then after removal the dictionary should contain **{"ANITA":90, "ASHA":92}**

(ii) To display the number of occurrences of the substring **"is"** in a string named **message.**

For example if the string **message** contains **"This is his book",** then the output will be 3.

OR

(B) A tuple named **subject** stores the names of different subjects. Write the Python commands to convert the given tuple to a list and thereafter delete the last element of the list.

24. (A) Ms. Veda created a table named **Sports** in a MySQL database, containing columns **Game_id, P_Age and G_name.** **2**

After creating the table, she realized that the attribute, **Category** has to be added. Help her to write a command to add the **Category** column. Thereafter, write the command to insert the following record in the table :

Game_id : G42

P_Age : Above 18

G_name : Chess

Category : Senior

OR

(B) Write the SQL commands to perform the following tasks :

(i) View the list of tables in the database, **Exam.**

(ii) View the structure of the table, **Term1.**

25. Predict the output of the following code : **2**

```
def callon(b=20,a=10):
    b=b+a
    a=b-a
    print(b,"#",a)
    return b
x=100
y=200
x=callon(x,y)
print(x,"@",y)
y=callon(y)
print(x,"@",y)
```

SECTION – C

26. Write the output on execution of the following Python code : **3**

```
S="Racecar Car Radar"
L=S.split()
for W in L :
    x=W.upper()
    if x==x[::-1]:
        for I in x:
            print(I,end="*")
    else:
        for I in W:
            print(I,end="#")
    print()
```

27. Consider the table ORDERS given below and write the output of the SQL queries that follow : **1 × 3 = 3**

ORDNO	ITEM	QTY	RATE	ORDATE
1001	RICE	23	120	2023-09-10
1002	PULSES	13	120	2023-10-18
1003	RICE	25	110	2023-11-17
1004	WHEAT	28	65	2023-12-25
1005	PULSES	16	110	2024-01-15
1006	WHEAT	27	55	2024-04-15
1007	WHEAT	25	60	2024-04-30

(i) `SELECT ITEM, SUM(QTY) FROM ORDERS GROUP BY ITEM;`

(ii) `SELECT ITEM, QTY FROM ORDERS WHERE ORDATE BETWEEN '2023-11-01' AND '2023-12-31';`

(iii) `SELECT ORDNO, ORDATE FROM ORDERS WHERE ITEM = 'WHEAT' AND RATE>=60;.`

28. (A) Write a user defined function in Python named **showInLines()** which reads contents of a text file named **STORY.TXT** and displays every sentence in a separate line. **3**

Assume that a sentence ends with a full stop (.), a question mark (?), or an exclamation mark (!).

For example, if the content of file **STORY.TXT** is as follows :

```
Our parents told us that we must eat vegetables to be healthy. And it turns out, our parents were right! So, what else did our parents tell?
```

Then the function should display the file's content as follows :

```
Our parents told us that we must eat vegetables to be healthy.
And it turns out, our parents were right!
So, what else did our parents tell?
```

OR

(B) Write a function, **c_words()** in Python that separately counts and displays the number of uppercase and lowercase alphabets in a text file, **Words.txt**.

29. Consider the table **Projects** given below : **1 × 3 = 3**

Table : Projects

P_id	Pname	Language	Startdate	Enddate
P001	School Management System	Python	2023-01-12	2023-04-03
P002	Hotel Management System	C++	2022-12-01	2023-02-02
P003	Blood Bank	Python	2023-02-11	2023-03-02
P004	Payroll Management System	Python	2023-03-12	2023-06-02

Based on the given table, write SQL queries for the following :

(i) Add the constraint, **primary key** to column **P_id** in the existing table **Projects**.

(ii) To change the language to **Python** of the project whose id is **P002**.

(iii) To delete the table **Projects** from MySQL database along with its data.

30. Consider a list named **Nums** which contains random integers.

Write the following user defined functions in Python and perform the specified operations on a stack named **BigNums.** **3**

(i) **PushBig() :** It checks every number from the list **Nums** and pushes all such numbers which have **5 or more digits** into the stack, **BigNums.**

(ii) **PopBig() :** It pops the numbers from the stack, **BigNums** and displays them. The function should also display **"Stack Empty"** when there are no more numbers left in the stack.

For example: If the list **Nums** contains the following data :

```
Nums = [213,10025,167,254923,14,1297653,31498,386,92765]
```

Then on execution of **PushBig()**, the stack **BigNums** should store :

```
[10025, 254923, 1297653, 31498, 92765]
```

And on execution of **PopBig()** , the following output should be displayed :

```
92765
31498
1297653
254923
10025
Stack Empty
```

SECTION – D

31. Consider the tables **Admin** and **Transport** given below : **1 × 4 = 4**

Table : Admin

S_id	S_name	Address	S_type
S001	Sandhya	Rohini	Day Boarder
S002	Vedanshi	Rohtak	Day Scholar
S003	Vibhu	Raj Nagar	NULL
S004	Atharva	Rampur	Day Boarder

Table : Transport

S_id	Bus_no	Stop_name
S002	TSS10	Sarai Kale Khan
S004	TSS12	Sainik Vihar
S005	TSS10	Kamla Nagar

Write SQL queries for the following :

(i) Display the student name and their stop name from the tables **Admin** and **Transport.**

(ii) Display the number of students whose **S_type** is not known.

(iii) Display all details of the students whose name starts with **'V'** .

(iv) Display student id and address in alphabetical order of student name, from the table **Admin**.

32. Sangeeta is a Python programmer working in a computer hardware company. She has to maintain the records of the peripheral devices. She created a csv file named **Peripheral.csv,** to store the details. The structure of **Peripheral.csv** is : 4

[P_id,P_name,Price]

where

P_id is Peripheral device ID (integer)

P_name is Peripheral device name (String)

Price is Peripheral device price (integer)

Sangeeta wants to write the following user defined functions :

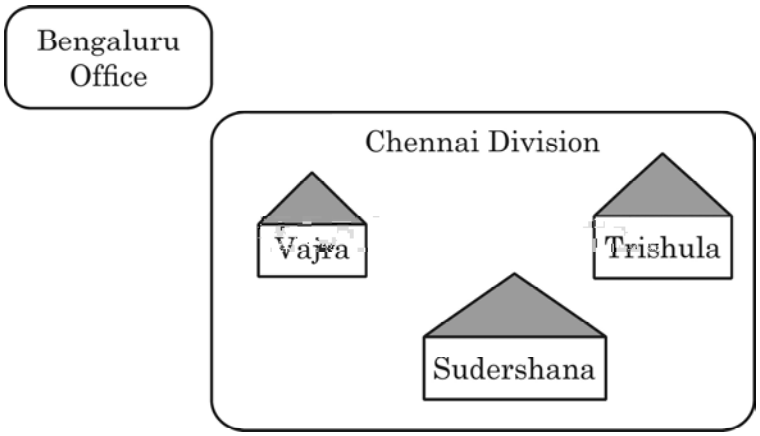
Add_Device() : to accept a record from the user and add it to a csv file, **Peripheral.csv.**

Count_Device() : To count and display number of peripheral devices whose price is less than 1000.

SECTION – E

33. Infotainment Ltd. is an event management company with its prime office located in Bengaluru. The company is planning to open its new division at three different locations in Chennai named as - Vajra, Trishula and Sudershana. **1 × 5 = 5**

You, as a networking expert need to suggest solutions to the questions in part (i) to (v), keeping in mind the distances and other given parameters.



Distances between various locations :

Vajra to Trishula	350 m
Trishula to Sudershana	415 m
Sudershana to Vajra	300m
Bengaluru Office to Chennai	2000 km

Number of computers installed at various locations :

Vajra	120
Sudershana	75
Trishula	65
Bengaluru Office	250

(i) Suggest and draw the cable layout to efficiently connect various locations in Chennai division for connecting the digital devices.

(ii) Which block in Chennai division should host the server ? Justify your answer.

(iii) Which fast and effective wired transmission medium should be used to connect the prime office at Bengaluru with the Chennai division ?

(iv) Which network device will be used to connect the digital devices within each location of Chennai division so that they may communicate with each other ?

(v) A considerable amount of data loss is noticed between different locations of the Chennai division, which are connected in the network. Suggest a networking device that should be installed to refresh the data and reduce the data loss during transmission to and from different locations of Chennai division.

34. (A) (i) Differentiate between `'w'` and `'a'` file modes in Python. **2 + 3 = 5**

(ii) Consider a binary file, **`items.dat`,** containing records stored in the given format :

```
{item_id: [item_name,amount]}
```

Write a function, **`Copy_new()`,** that copies all records whose amount is greater than 1000 from **`items.dat` to `new_items.dat`.**

OR

(B) (i) What is the advantage of using **`with`** clause while opening a data file in Python ? Also give syntax of **`with`** clause.

(ii) A binary file, **`EMP.DAT`** has the following structure :

```
[Emp_Id, Name, Salary]
```

where

`Emp_Id` : Employee id

`Name` : Employee Name

`Salary` : Employee Salary

Write a user defined function, **`disp_Detail()`**, that would read the contents of the file **`EMP.DAT`** and display the details of those employees whose salary is below **`25000`.**

35. (A) (i) Define cartesian product with respect to RDBMS. **1 + 4 = 5**

(ii) Sunil wants to write a program in Python to update the quantity to **20** of the records whose item code is **111** in the table named **`shop`** in MySQL database named **`Keeper`**.

The table **`shop`** in MySQL contains the following attributes :

- **`Item_code`**: Item code (Integer)
- **`Item_name`**: Name of item (String)
- **`Qty`**: Quantity of item (Integer)
- **`Price`**: Price of item (Integer)

Consider the following to establish connectivity between Python and MySQL :

- Username : **`admin`**
- Password : **`Shopping`**
- Host : **`localhost`**

OR

(B) (i) Give any two features of SQL.

(ii) Sumit wants to write a code in Python to display all the details of the passengers from the table **`flight`** in MySQL database, **`Travel`**. The table contains the following attributes :

`F_code`: Flight code (String)

`F_name`: Name of flight (String)

`Source`: Departure city of flight (String)

`Destination`: Destination city of flight (String)

Consider the following to establish connectivity between Python and MySQL :

- Username : **`root`**
- Password : **`airplane`**
- Host : **`localhost`**