CBSE

Central Board of Secondary Education

Question Paper

2024

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Series &RQPS

Set-4

प्रश्न-पत्र कोड
Q.P. Code **90**

रोल नं.
Roll No. | | | | | | | | |

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

INFORMATICS PRACTICES

*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) *This question paper contains five sections,* ***Section A*** *to* ***E****.*

(ii) ***All*** *questions are compulsory.*

(iii) ***Section A*** *has* ***18*** *questions carrying* ***1*** *mark each.*

(iv) ***Section B*** *has* ***7*** *Very Short Answer type questions carrying* ***2*** *marks each.*

(v) ***Section C*** *has* ***5*** *Short Answer type questions carrying* ***3*** *marks each.*

(vi) ***Section D*** *has* ***2*** *questions carrying* ***4*** *marks each.*

(vii) ***Section E*** *has* ***3*** *questions carrying* ***5*** *marks each.*

(viii) ***All*** *programming question are to be answered using Python language only.*

SECTION – A

1. In _____ topology, the devices are arranged in the form of multiple branches in hierarchical manner. **1**

   (i) Star (ii) Tree

   (iii) Mesh (iv) Bus

2. Ridhima purchased a license for a copy of a software and made additional copies without the permission of the copyright owner. This act of hers is known as _____. **1**

   (i) Trademark Infringement (ii) Identity Theft

   (iii) Copyright Infringement (iv) Patent

3. What can an individual do to enhance the privacy of data stored digitally ? **1**

   (i) Share sensitive information on social media platforms.

   (ii) Use your date of birth as your password.

   (iii) Regularly update software installed on your device.

   (iv) Download and install software from unknown sources.

4. What will be the output of the following query ? **1**

```
SELECT POWER(2,MOD(17,3));
```

   (i) 8 (ii) 1

   (iii) 0 (iv) 4

5. Which of the following is not an aggregate function in MYSQL ? **1**

(i) **AVG()** (ii) **MAX()**

(iii) **LCASE()** (iv) **MIN()**

6. _____ is the gaining of unauthorized access to data in a computer system. **1**

(i) Phishing (ii) Plagiarism

(iii) Hacking (iv) Copyright violation

7. Which of the following is NOT true with respect to CSV files ? **1**

(i) Values are separated by commas.

(ii) **to_csv()** can be used to save a dataframe to a CSV file.

(iii) CSV file is created using a word processor.

(iv) CSV file is a type of text file.

8. Which MySQL command helps to add a primary key constraint to any table that has already been created ? **1**

(i) **UPDATE** (ii) **INSERT INTO**

(iii) **ALTER TABLE** (iv) **ORDER BY**

9. What will be the output of the following query ? **1**

```
SELECT SUBSTR("G20 2023 INDIA",5,4);
```

(i) G20 2 (ii) 2023

(iii) INDI (iv) 023

10. What will be the output of the following Python code ? **1**

```
import pandas as pd
dd={'One':1,'Two':2,'Three':3,'Seven':7}
rr=pd.Series(dd)
rr['Four']=4
print(rr)
```

(i)
```
One    1
Two    2
Three  3
Seven  7
dtype: int64
```

(ii) One 1
Two 2
Three 3
Four 4
Seven 7
dtype: int64

(iii) Four 4
One 1
Two 2
Three 3
Seven 7
dtype: int64

(iv) One 1
Two 2
Three 3
Seven 7
Four 4
dtype: int64

11. Which of the following clause cannot work with SELECT statement in MYSQL ? **1**

(i) **FROM** (ii) **INSERT INTO**

(iii) **WHERE** (iv) **GROUP BY**

12. Which of the following command will not show first five rows from the Pandas series named **`Sl`** ? **1**

(i) **`Sl[0:5]`** (ii) **`Sl.head()`**

(iii) **`Sl.head(5)`** (iv) **`Sl.head[0:5]`**

13. Rama was unable to understand how the recruiters were able to know about her digital activity when she has not shared anything with them. The recruiters might have checked _____ of Rama. **1**

(i) Carbon Footprint (ii) Water Footprint

(iii) Online print (iv) Digital Footprint

14. Which MySQL string function is used to extract a substring from a given string based on a specified starting position and length ? **1**

(i) **`SUBSTRING_INDEX()`** (ii) **`LENGTH()`**

(iii) **`MID()`** (iv) **`TRIM()`**

15. The software that is free for anyone, and its source code is available for access, modification, correction, and improvement is called _____. **1**

(i) Proprietary software (ii) Commercial software

(iii) Free and Open source software (iv) Copyrighted software

16. _____ help in data protection through copyrights, patents and trademarks. **1**

(i) Data Privacy Right (ii) Right to Innovation

(iii) Intellectual Property Rights (IPR)

(iv) Right to Data Protection

17. **Assertion (A) :** Cyber Bullying can have serious, emotional and psychological effects on victims. **1**

Reason (R) : Online Bullying is not a crime while offline bullying is a crime.

(i) Both (A) and (R) are true and (R) is the correct explanation for (A).

(ii) Both (A) and (R) are true and (R) is not the correct explanation for (A).

(iii) (A) is true and (R) is false.

(iv) (A) is false but (R) is true.

18. **Assertion (A) :** A Series is a one dimensional array and a DataFrame is a two-dimensional array containing sequence of values of any data type. (int, float, list, string, etc.) **1**

Reason (R) : Both Series and DataFrames have by default numeric indexes starting from zero.

(i) Both (A) and (R) are true and (R) is the correct explanation for (A).

(ii) Both (A) and (R) are true and (R) is not the correct explanation for (A).

(iii) (A) is true and (R) is false.

(iv) (A) is false but (R) is true.

SECTION – B

19. (a) Expand URL. Identify the protocol and domain in the following URL : **2**

https://epathshala.nic.in/topics.php?len=en

OR

(b) Write any one advantage and one disadvantage of Star topology.

20. The Python code written below has syntactical errors. Rewrite the correct code and underline the correction(s) made. **2**

```
import Pandas as pd
stud=['Name':'Ramya','Class':11,'House':'Red']
s=p.Series(s)
print(s)
```

21. What will be the output of the following SQL queries : **2**

(i) `SELECT RIGHT("CHANDRAYAN3",4);`

(ii) `SELECT ROUND(76345.456,2);`

22. Find the output of the following Python code : **2**

```
import pandas as pd
com=pd.Series([45,12,15,200],index=['mouse','printer',
'webcam','keyboard'])
print(com[1:3])
```

23. What is the primary function of a gateway in a computer network ? Explain briefly. **2**

24. Consider the following Python code : **2**

```
import pandas as pd
S1=pd.Series(['Rubina','Jaya','Vaibhav'],index=[10,16,18])
S2=pd.Series(______, index=[10,16,18])
S3=pd.Series([56,67,86],______)
xiia={'Name':______,'Subject':S2,'Marks':S3}
df=pd.DataFrame(_____)
print(df)
```

Complete the above Python code to display the following output :

	Name	Subject	Marks
10	Rubina	IP	56
16	Jaya	HSc	67
18	Vaibhav	IP	86

25. Write any two differences between UPDATE and ALTER TABLE commands of MySQL. **2**

SECTION – C

26. (a) Consider the given table and write the following queries in MySQL : **3**

Table : Sports

Sid	SName	Fees	DateofPlay	CoachId
1	Karate	1200	2024-08-24	S1
2	Football	1800	2024-09-13	S2
3	Cricket	1500	2024-06-14	S3
4	Lawn Tennis	2500	2024-09-25	S4
5	Badminton	1800	2024-10-20	S5

(i) To display Sid and name of those sports which are to be played in the month of September.

(ii) To display all Sports names in lower case.

(iii) To display last two characters of all sports names whose fees is less than 1500.

OR

(b) Predict the output of the following queries based on the **table Sports** given above :

(i) `SELECT UCASE(TRIM(SName)) FROM Sports WHERE Sid=5;`

(ii) `SELECT LEFT (SName,3) FROM Sports WHERE DateofPlay>"2024-09-13";`

(iii) `SELECT SUBSTR (CoachId,1) FROM Sports WHERE SName="Cricket" or Fees>=2000;`

27. Kabir, a data analyst, has stored the voter's name and age in a dictionary. Now, Kabir wants to create a list of dictionaries to store data of multiple voters. He also wants to create a DataFrame from the same list of dictionaries having appropriate row labels as shown below : **3**

```
          Voter_Name    Voter_Age
Ar1001      Arjun         35
Ba3002      Bala          23
Go4002     Govind         25
Dh4007      Dhruv         19
Na6005      Navya         18
```

Help Kabir in writing a Python program to complete the task.

28. Answer the following questions based on the table Salesman given below : **3**

Table : Salesman

salesman_id	name	city	commission
5001	Neil Bhatt	Delhi	0.15
5002	Rohan Malik	Mumbai	0.13
5005	Ravi Mohan	Delhi	0.11
5006	Mehak Rai	Delhi	0.14
5007	Paul Lal	Bangalore	0.13
5003	Raman Sen	Kolkata	0.12

(i) How many tuples does the given table have ?

(ii) Suggest the primary key for the given table.

(iii) Write the MySQL query to display all the records in descending order of commission.

29. (a) Police officials arrested four members of an interstate gang for allegedly duping many people from different states on the pretext of providing them with holiday packages after creating fake websites of Tours and Travels. The cyber criminals sent fraudulent emails containing links to fraudulent websites created by them. **3**

The victim in his complaint told police that he was offered a holiday package to Dubai for a total of 10 times in the next 10 years and was charged ₹ 1.45 lakh through his credit card.

Answer the following questions pertaining to the given news byte :

(i) Identify the type of cybercrime mentioned in above case.

(ii) Which Act deals with such crimes in India ?

(iii) Suggest any one precaution that can be taken to avoid falling prey to such criminals.

OR

(b) ABC Electronics, a popular electronics retail chain, has been a prominent player in the market for years. However, recent concerns over environmental degradation and e-waste have prompted the company to rethink its strategies and practices. As the newly appointed sustainability manager, you've been asked to answer the following questions :

(i) Considering the environmental concerns associated with e-waste, outline any one negative impact of the electronic products on the environment.

(ii) Gopal is a college student who recently bought his new smartphone from ABC electronics. He's excited about the new features and improved performance of his new device. However, he's now left with his old smartphone, which is still functional but considered outdated. Suggest him any one action that he can take for his old smartphone.

(iii) Provide any one recommendation on how ABC Electronics can responsibly manage its e-waste while minimizing harm to the environment.

30. Consider the given DataFrame **'password'** : **3**

	CodeName	Category	Frequency
0	aaaaaa	alpha	6.91
1	dragon	animal	18.52
2	baseball	sport	1.29
3	football	sport	11.11
4	monkey	animal	3.72
5	qwerty	alpha	1.85
6	abcde	alpha	3.19

Write suitable Python statements for the following :

(i) To add a new row with following values :

CodeName – 'abc123'

Category – alphanumeric

Frequency – 12.8

(ii) To delete the row with the row label 2.

(iii) To delete the column having column label as Frequency.

SECTION – D

31. Rupam created a MySQL table to store the details of Nobel prize winners. Help her to write the following MySQL queries : **4**

TABLE : NOBEL

Winner_Id	YEAR	SUBJECT	WINNER	COUNTRY	CATEGORY
1001	1970	Physics	Hannes Alfven	Sweden	Scientist
1002	1970	Physiology	Bernard Katz	NULL	Scientist
1003	1970	Literature	Aleksandr Solzhenitsyn	Russia	Linguist
1004	1971	Chemistry	Gerhard Herzberg	Germany	Scientist
1005	1978	Peace	Menachem Begin	Israel	Prime Minister
1006	1987	Economics	Robert Solow	USA	Economist
1007	1994	Literature	Kenzaburo Oe	Japan	Linguist

(i) Display the names of Nobel Prize winner in 'Literature' for the year 1970.

(ii) Display the subject and category of winners whose country is not known.

(iii) Display the details of all Nobel Prize winners who were Scientists.

(iv) Count total number of winners whose subject is Literature.

32. Ms. Ritika conducted an online assessment and stored the details in a DataFrame **result** as given below : **4**

	Name	Score	Attempts	Qualify
a	Atulya	12.5	1	yes
b	Disha	9.0	3	no
c	Kavita	16.5	2	yes
d	John	15.0	1	no

Answer the following questions :

(i) Predict the output of the following Python statement :

```
print(result.loc [:,'Attempts'] > 1)
```

(ii) Write the Python statement to display the last three records.

(iii) Write Python statement to display records of 'a' and 'd' row labels.

OR

(Option for Part (iii) only)

(iii) Write suitable Python statement to retrieve the data stored in the file, **'registration.csv'** into a DataFrame, **'regis'**.

SECTION – E

33. Excellent Consultancy Pvt. Ltd. maintains two tables for all its employees. **5**

Table : Employee

Employee_ id	First_ name	Last_ name	Salary	Joining_ date	Department
E101	Monika	Das	100000	2019-01-20	Finance
E102	Mehek	Verma	600000	2019-01-15	IT
E103	Manan	Pant	890000	2019-02-05	Banking
E104	Shivam	Agarwal	200000	2019-02-25	Insurance
E105	Alisha	Singh	220000	2019-02-28	Finance
E106	Poonam	Sharma	400000	2019-05-10	IT
E107	Anshuman	Mishra	123000	2019-06-20	Banking

Table : Reward

Employee_id	Date_reward	Amount
E101	2019-05-11	1000
E102	2019-02-15	5000
E103	2019-04-22	2000
E106	2019-06-20	8000

Write suitable SQL queries to perform the following task :

(i) Change the Department of **Shivam** to IT in the table **Employee**.

(ii) Remove the record of **Alisha** from the table **Employee**.

(iii) Add a new column **Experience** of integer type in the table **Employee**.

(iv) Display the first name, last name and amount of reward for all employees from the tables **Employee** and **Reward**.

(v) Display first name and salary of all the employees whose amount is less than 2000 from the tables **Employee** and **Reward**.

OR

Write suitable SQL queries for the following task :

(i) Display the year of joining of all the employees from the table **Employee**.

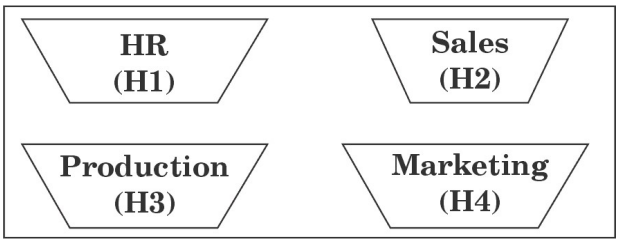
(ii) Display each department name and its corresponding average salary.

(iii) Display the first name and date of reward of those employees who joined on Monday from the tables **Employee** and **Reward**.

(iv) Display sum of salary of those employees whose reward amount is greater than 3000 from the tables **Employee** and **Reward**.

(v) Remove the table **Reward**.

34. FULLMAN Tech, Bengaluru is a company that deals with software development. They have different divisions HR (H1), Sales (H2), Production (H3) and Marketing (H4). The layout of the Bengaluru branch is : **5**



The management wants to connect all the divisions as well as all the computers of each division (H1, H2, H3 and H4).

Distance between the divisions are as follows :

H1 to H2	**76 m**
H1 to H3	**185 m**
H1 to H4	**88 m**
H2 to H3	**140 m**
H2 to H4	**125 m**
H3 to H4	**160 m**

Number of computers in each of the division :

Division	Number of Computers
H1	140
H2	340
H3	180
H4	260

Based on the above specifications, answer the following questions :

(i) Suggest the topology and draw the most efficient cable layout for connecting all the divisions of Bengaluru branch.

(ii) FULLMAN Tech is expanding its reach and therefore it establishes a new office in Delhi. Out of LAN, MAN, and WAN what kind of network will be created to connect Bengaluru office with Delhi Office ?

(iii) Suggest the division for the placement of server in Bengaluru branch. Explain the reason for your selection.

(iv) Suggest the placement of the following devices in Bengaluru branch :

(a) Repeater

(b) Switch/Hub

(v) The company's manager Ms. Ritu is worried as to how she can extend and modify the functionality of the web browser. Help her by giving names of any two tools.

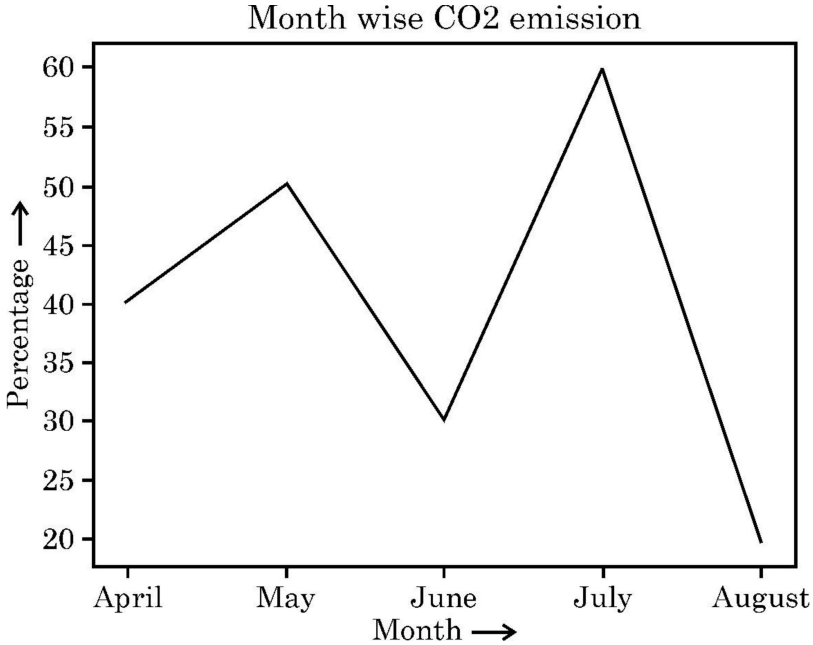
35. (a) The inventory management software of a grocery shop stores the price of all fruits as follows : **5**

```
Fruits=['Apple','Guava','Papaya','Grapes','Mango']
Price=[150,70,50,30,120]
```

Write suitable Python code to generate a Bar Chart on the given data. Also add the chart title and label for X and Y axis. Also add suitable statement to save this chart with the name **`fruits.png`**.

OR

(b) Write suitable Python code to draw the following line chart "CO2 Emission" having title and label for X and Y axis as shown below.



Also give suitable Python statement to save this chart with the name, **emission.png**.

CBSE STUDY MATERIAL

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2	Result
3	Syllabus

OTHER RESOURCES
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- Class 9 Notes
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- Class 11 Notes
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10	Sample Paper
11	Sample Paper
12	Sample Paper
09	Question Paper
10	Question Paper
11	Question Paper
12	Question Paper
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