

SAMPLE QUESTION PAPER 2023

INFORMATICS PRACTICES (065)

CLASS 12

TIME : 3 HOURS

M. M. : 70

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. One internal choice is given in Q35 against part c only.
8. All programming questions are to be answered using Python Language only.

SECTION A

1. State True or False: (1)
 - (i) A hub can be replaced by a switch for better network performance.
 - (ii) The dynamic websites are faster than static websites.Select the correct option:
 - (a) (i) True and (ii) False
 - (b) (i) False and (ii) false
 - (c) (i) True and (ii) True
 - (d) (i) False and (ii) True
2. Mention the full forms of the term GPL. (1)
 - (a) Generalized Public License
 - (b) General Private License

- (c) General Paid License
(d) General Public License
3. State True or False: (1)
- (i) Licensing is a legal procedure to provide rules and guidelines for other user to use the work.
(ii) Digital Footprints are stored only temporarily (for few days) and not permanently.
Choose the correct alternative:
- (a) (i) True (ii) False
(b) (i) False (ii) True
(c) (i) True (ii) True
(d) (i) False (ii) False
4. Rewrite the given MySQL command after removing the error(s). (1)
- SELECT Name, Age and Marks FROM Student ORDER BY Marks DESCENDING WHERE Age>=10;
- (a) SELECT Name, Age, Marks WHERE Age>=10 ORDER BY Marks DESC FROM Student;
(b) SELECT Name, Age, Marks FROM Student WHERE Age>=10 ORDER BY Marks DESC;
(c) SELECT Name, Age and Marks FROM Student WHERE Age>=10 ORDER BY Marks DESC;
(d) SELECT Name, Age, Marks FROM Student ORDER BY Marks DESC WHERE Age>=10;
5. State the output of the given code: (1)
- SELECT ROUND(6748.9514 , -MONTH('2023-02-12'));
- (a) 6700
(b) 6800
(c) -6700
(d) -6800
6. **SNEHAL LOHARIWAL** of **AG Church School, Purulia** is not sure about the concept of Shareware and Proprietary Software. Choose the similar aspects of both Shareware and Proprietary Software to help her. (1)
- (i) Both have no source code.
(ii) Both are freely available.
(iii) Both cannot be modified.
(iv) Both can be downloaded from Internet.
Select the right choice from the followings:
- (a) (i) , (iii) and (iv)
(b) (ii) and (iii)
(c) (i) and (iii)
(d) (i) , (ii) and (iv)
7. What will be the output of the following MySQL command? (1)

Select INSTR('Aamader Bangla Band' , 'ba');

- (a) 16
- (b) 9
- (c) 8
- (d) Error

8. Which of the following is true regarding Primary Key? (1)

- (i) A Primary Key may contain NULL values.
- (ii) A Primary Key is must for every table.
- (iii) A Foreign Key derives its values from Primary Key.
- (iv) A Primary Key exclusively identifies the rows of a table.

Select the right choice from the followings:

- (a) (i) , (iii) and (iv)
- (b) (ii) and (iii)
- (c) (iii) and (iv)
- (d) (i) , (ii) and (iv)

9. Find the output of the following MySQL statement: (1)

SELECT MID("PURULIA" , ROUND(2.693 , 0) , 3);

- (a) RUL
- (b) URU
- (c) RULI
- (d) None of these

10. Observe the following DataFrame 'Gadgets' created by **AYUSH TIWARI**: (1)

	Gcode	GName	GPrice
0	G10021	Computer	40000
1	G10030	Mobile	20500
2	G10045	Laptop	75000

Calculate 10% of GPrice and assign to a new column named Tax.

- (a) Gadgets['Tax'] = ['GPrice'] * 10 / 100
- (b) Gadgets['Tax'] = Gadgets[GPrice] * 10 / 100
- (c) Gadgets['Tax'] = Gadgets['GPrice'] + Gadgets['GPrice'] * 10 / 100
- (d) Gadgets['Tax'] = Gadgets['GPrice'] * 10 / 100

11. Identify which statement(s) is/are not true about the head() function in Python. (1)

- (i) It is used for accessing first n number of rows or columns.
- (ii) It can not access less than five rows from the top.
- (iii) It returns first five rows in case no value is passed to it.
- (iv) It works on both Series and DataFrame objects.

Select the right choice from the followings:

- (a) (i) , (iii) and (iv)
- (b) (i) and (ii)
- (c) (iii) and (iv)
- (d) (i) , (ii) and (iv)

12. A DataFrame named 'Item' exists with a column Price. **ADITI AGARWAL** wants to show the details of the items whose Price is more than 100. Write code for the same. (1)

- (i) `Item[Item['Price'] > 100]`
- (ii) `Item[Item[Price] > 100]`
- (iii) `Item[Item.Price > 100]`
- (iv) `Item[Price > 100]`

Find out the correct choice from the given options:

- (a) (i) , (iii) and (iv)
- (b) (i) and (ii)
- (c) (i) and (iii)
- (d) (i) , (ii) and (iv)

13. State True or False: (1)

- (i) Star topology uses terminators at the ends.
- (ii) The World Wide Web is a way or medium of accessing information over the Internet.

Choose the correct option from the followings:

- (a) (i) False (ii) True
- (b) (i) False (ii) False
- (c) (i) True (ii) False
- (d) (i) True (ii) True

14. Which MySQL command(s) will print first three characters of the string '**SHRUTI MAHATA**'? (1)

- (i) `SELECT MID('SHRUTI MAHATA' , 1 , 3);`
- (ii) `SELECT LEFT('SHRUTI MAHATA' , 3);`
- (iii) `SELECT SUBSTR('SHRUTI MAHATA' , -7 , 3);`
- (iv) `SELECT SUBSTRING('SHRUTI MAHATA' , 1 , 3);`

Select the appropriate option:

- (a) (i) , (ii) , (iii) and (iv)
- (b) (ii) , (iii) and (iv)
- (c) (i) , (ii) and (iii)
- (d) (i) , (ii) and (iv)

15. Software which cannot be used freely and whose code cannot be modified is known as: (1)

- (a) Open Source Software

- (b) Shareware
- (c) Proprietary Software
- (d) Licenseware

16. **VIDHI JAIN** is not fully aware of the concept of Cyber Crime. Identify the type of Cyber Crimes from the followings to help her: (1)

- (i) A Cyber Crime in which personal information are stolen from computers or computer networks, to commit fraud by using the data gained unlawfully.
- (ii) A Cyber Crime in which the technology is used to harass, threaten or humiliate a person or target.

Choose the right option from the followings:

- (a) (i) Phishing (ii) Cyber Harassing
- (b) (i) Plagiarism (ii) Cyber Threatening
- (c) (i) Phishing (ii) Online Bullying
- (d) (i) Hacking (ii) Cyber Bullying

17. In the question given below, there are two statements marked as assertion(A) and reason(R). Read the statements and choose the correct option. (1)

Assertion(A) : Cookies are small bits of data stored as text files on a browser and websites use those small bits of data to keep track of users.

Reason(R) : Cookies are always destroyed when the current browser window is closed.

- (a) Both Assertion (A) and Reason (B) are correct and Reason (R) is the correct explanation of Assertion (A)
- (b) Both are correct but Reason(R) is not the correct explanation of Assertion (A)
- (c) Assertion (A) is correct but Reason (R) is not correct
- (d) Assertion (A) is not correct but Reason (R) is correct

18. In the question given below, there are two statements marked as assertion(A) and reason(R). Read the statements and choose the correct option. (1)

Assertion(A) : Pandas Series object allows mathematical operations between two Series objects and returns NaN in case of some of the index values.

Reason(R) : Both the Series objects require same index for meaningful mathematical operations.

- (a) Both Assertion (A) and Reason (B) are correct and Reason (R) is the correct explanation of Assertion (A)
- (b) Both are correct but Reason(R) is not the correct explanation of Assertion (A)
- (c) Assertion (A) is correct but Reason (R) is not correct
- (d) Assertion (A) is not correct but Reason (R) is correct

SECTION B

19. While studying for his class XII Board's exam, **ADITYA MUNDHRA** was not getting the correct answer about the differences between a Website and Webpage. He asked his friend **VEDANSH LOHARIWALA** for the answer. What points **VEDANSH** might have suggested to **ADITYA**? (2)

OR

How an Add-on differs from a Plug-in?

20. Write the output of the following MySQL commands: (2)

- (a) `SELECT ROUND(345.79 , 1) + ROUND(345.79 , -1);`
(b) `SELECT SUBSTR('GOOD MORNING INDIA' , MOD(-11 , 6) , 2);`

21. Consider the string "Python Programming": (2)

Write SQL commands to:

- (a) Find the position of the substring "gram" in the given string.
(b) Display the string "ming" from the given string.

22. Write the Python program to plot a line chart with the help of given data. Ensure that the chart contains proper axis labels and title. (2)

House = ['Buntain' , 'Olson' , 'Ketcham' , 'Simpson']
Score = [22.3 , 25 , 7.2 , 35.6]

23. Expand the following terms: (2)

- (a) GNU
(b) FOSS
(c) IPR
(d) GPL

OR

YUVIKA MOHTA of **Purulia** is novice while using Internet. She has not taken necessary measure to protect her data. Mention few consequences of unprotected data, so that she can take required steps to protect her data.

24. **SARTHAK JAIN** and **PIYUSH AGARWAL** both are working on Python Series. They have created the given Series object named 'S': (2)

```
1 101
2 202
3 303
4 404
5 505
```

dtype: int64

- (a) Which of the following commands will show same output?

- (i) `print(S.loc[1])`
- (ii) `print(S.iloc[0])`
- (iii) `print(S.iloc[1])`
- (iv) `print(S[1])`

(b) Mention the result of the given command:

```
print(S.iloc[-2] + S.loc[2] % S.iloc[4])
```

25. **CHETAN LOAHRIWAL**, a student of **The AGCS, Purulia** has created a DataFrame named 'df' showing the details of his friends: (2)

	Id	Name	Age
Stu1	2	PARIDHI JHAWAR	17
Stu2	6	CHIRAG LOHARIWAL	19
Stu3	7	ANUSHKA SHAW	18
Stu4	11	SOMEDUTTA NANDI	17
Stu5	16	ADITI CHOURASIA	18
Stu6	25	SWETA CHOUBEY	17

Write the output produced by the following codes:

- (a) `print(df.iloc[0 : 3 , :])`
- (b) `print(df.iloc[3 : , :])`

SECTION C

26. What will be the output of the following MySQL commands? (3)

- (a) `SELECT MID("Sunshine Public School" , 3 , LENGTH("Java"));`
- (b) `SELECT MOD(14 * 9 , 90 / 3);`
- (c) `SELECT MOD(YEAR("1988-09-24") - 1 , 100);`

27. Observe the given Python code carefully: (3)

```
import pandas as pd
S = pd.Series([10, 20, 30, 40, 50, 60, 70])
```

Write output for the followings:

- (a) `print(S.loc[2])`
- (b) `print(S.loc[[2]])`
- (c) `print(S.loc[-9 : 9])`

28. **SHRISTI SARAF** of **Purulia** is learning to create and save charts in Python. In order to help her, write missing statements to create and save the chart in the location "D://python/cricket.png". (3)

```
import matplotlib.pyplot as pl
```

```
Teams = ['Purulia' , 'Ranchi' , 'Kolkata' , 'Dhanbad']
```

```
Scores = [274 , 196 , 201 , 216]
```

_____ **Statement 1**

_____ **Statement 2**

_____ **Statement 3**

29. Mention any three freedoms offered by Open Source Software. (3)

OR

List three differences between Proprietary Software and Open Source Software.

30. **PALAK AGARWAL** and **DIVYANSHI JAISWAL** both have created the following 'Teacher' table. (3)

Observe the table and write SQL commands for (a) to (b) and output for (c).

Tid	TName	Department	Salary	NoofPeriods
100	ASMITA MAHATA	Biology	45000	25
101	GOURAV AGARWAL	Mathematics	43000	25
102	PAYAL DUTTA	Computer	49500	24
103	MEHAK DAMANI	Accounts	52000	NULL
104	PRERNA PANCHARIA	Mathematics	49000	25
105	UJJWAL KHEDIA	Computer	55000	24
106	PRATEEK TIRKEY	Economics	47500	NULL
107	ANIRUDDHA MODAK	Computer	47000	20

(a) To show all the details of the teacher table in ascending order of salary.

(b) To display department and total teachers in each department.

(c) SELECT Department, COUNT(*) FROM Teacher GROUP BY Department HAVING COUNT(*)>=2;

OR

Write down the purpose of the following MySQL functions.

(a) LEFT()

(b) MID()

(c) MOD()

SECTION D

31. Consider a table 'Teacher' that contains the following data:

(5)

TNo	TName	Address	Subject	Qualification	Salary	Post
1	SAMARPIT SHARMA	Kolkata	Economics	BA	25409.789	TGT
2	ADARSH BANKA	Delhi	Computer	BCA	21200.454	TGT
3	RISHABH DEY	Purulia	Hindi	MA	38274.657	PGT
4	BHAVYA SINGHANIA	Chennai	Biology	B Sc	28782.228	TGT
5	NAMAN KUMAR LILHA	Purulia	Physics	M Sc	32842.487	PGT

Write the SQL queries using SQL functions to perform the following operations:

- To extract last three characters from name and first four characters from address of all the teachers.
- To display contents of qualification field in small letters.
- To display the position of the string 'AR' in the TName field whose TName field contains the same string anywhere in that.
- To round off the salary to the nearest integer value of all PGT teachers.
- To count number of TGT and PGT teachers and add their salary values.

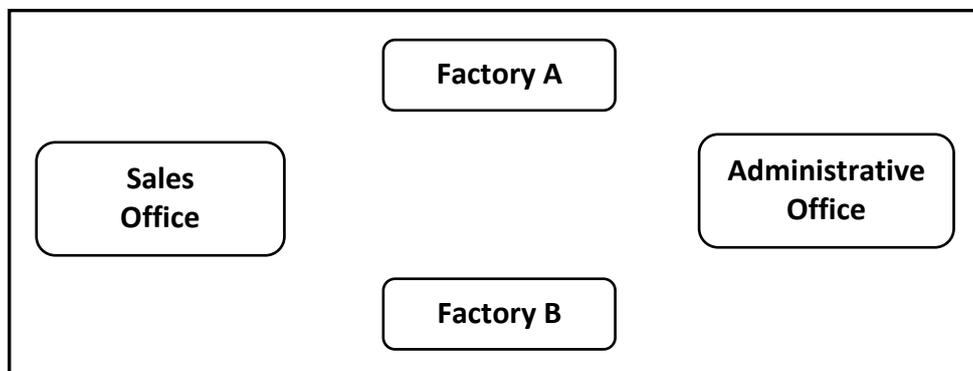
OR

Consider the table 'Teacher' given above and write the output of the MySQL queries (a) to (e).

- SELECT TName, Qualification, Post FROM Teacher WHERE Qualification NOT LIKE '%A';
- SELECT TName, ROUND(Salary, -2) FROM Teacher WHERE Post = 'PGT';
- SELECT MID(TName, 1, 3), Post FROM Teacher WHERE Qualification IN ('BA', 'MA');
- SELECT TName, ROUND(Salary, 2) Post FROM Teacher WHERE Salary < 26000;
- SELECT Qualification, Post FROM Teacher WHERE TName LIKE '__A%';

32. AVIJEET Industries owned by AVIJEET KUMAR SAHU of Purulia, has set up its new production unit and sales office at Ranchi. The company compound has four buildings as shown in the diagram below:

(5)



Distances between these buildings are as follows:

▪ Administrative Office to Factory A	150 m
▪ Factory A to Factory B	50 m
▪ Factory B to Sales Office	100 m
▪ Sales Office to Administrative office	200 m
▪ Administrative Office to Factory B	125 m
▪ Factory A to Sales Office	85 m

Number of computers in each of the buildings is follows:

▪ Administrative Office	25
▪ Factory A	15
▪ Factory B	18
▪ Sales Office	15

- Suggest the most appropriate topology for the connection between the offices.
- Suggest a cable layout of connections between the buildings so that each building is directly connected to administrative office.
- Suggest the most suitable place (i.e. building) to house the server of this production unit with a suitable reason.
- Suggest the placement of the Repeater with justification.
- Suggest the type of network formed. Also justify.

33. Given below is a DataFrame named 'DF' created by **RAJ AGARWAL** of **AGPN School, Purulia.** (5)

Observe it and write the output produced by the given commands:

	Chirag	Ujjwal	Chetan	Raj
Eng	85	82	95	70
IPR	90	95	92	86
Maths	80	85	90	79

- `print(DF.shape)`
- `print(len(DF.columns) + len(DF.index))`
- `print(DF.size)`
- `print(DF.iloc[1, 1] + DF.iloc[-2, -2])`
- `print(DF.T.shape)`

OR

Write code to do the followings on the DataFrame 'df' given below:

	SNAME	MARKS	CLASS
0	PAAWAN JAIN	98	XII
1	KRIKA AGARWAL	91	XI
2	SUPRATIK DUTTA	87	XI
3	KESHAV AGARWAL	90	XII
4	TAMSIL FATMA	85	XII
5	NELSON VALANKANI	82	XI
6	PALAK JALAN	95	XII

- (a) To display only SNAME and CLASS columns.
 (b) To rename the column SNAME to NAME.
 (c) To drop the column MARKS.
 (d) To change the name **SUPRATIK DUTTA** to **RAJ KANDU**.
 (e) To add a new column with following details:
 Column Name : AGE
 Values : 17, 16, 17, 18

SECTION E

- 34. ARKAPRABHA PAUL** a student of "**AG Church School, Purulia**" has created the following table 'Student' to store the records of the students: (1+1+2)

Admno	Name	Stream	Optional	Average
1001	ANUBHAB ROY	Commerce	CS	90
1002	ADRIJA DEY	Science	Maths	80
1003	SHRUTI JAISWAL	Humanities	Geo	65
1004	TIRTHANKAR MUKHERJEE	Science	Pol Sc	60
1005	DEBASMITA RAY	Commerce	Maths	60
1006	RIDDHITA BANERJEE	Science	CS	65

Predict the output of the following queries:

- (a) Select AVG(Average) From Student Where Stream = 'Science';
 (b) Select LEFT(Name, 3) From Student Where Average != 60;
 (c) Select Name, Optional From Student Where Name LIKE '___A%';

OR (Option for part (c) only)

Based on the table given above, help **ARKAPRABHA** in writing query for the following task:

To display the name of the student who gets highest average.

35. A dictionary named 'agcs' created by **SHRUTI AGARWAL** contains the following data: (1+1+2)

agcs = {'Name' : ['Rashmi', 'Harsh', 'Ganesh', 'Priya', 'Vivek'], 'Grade' : ['A1', 'A2', 'B1', 'A1', 'B2']}

Write statements for the followings:

- Create a DataFrame named 'AG' using above data.
- Add a column named Marks in the DataFrame 'AG' with following data:
[92, 95, 89, 96, 82]
- Delete third and fifth row from the DataFrame 'AG'.

OR (Option for part (c) only)

Change the name of the column from Grade to Rank.

Sample paper submitted by:

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