



नवोदय विद्यालय समिति
NAVODAYA VIDYALAYA SAMITI

प्रथम पूर्व-सत्रीय परीक्षा -2022-23
FIRST PRE-BOARD EXAMINATION -2022-23

SUBJECT: INFORMATICS PRACTICES (CODE-065)

CLASS – XII

Maximum Marks: 70

Time: 3 Hours

SET 1

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 Q.No. 35 against part E only.
8. All programming questions are to be answered using Python Language only.

SECTION A

1. Bluetooth is an example of - 1 M
 - i. WAN
 - ii. MAN
 - iii. PAN
 - iv. LAN
2. Digital footprints are stored in local web browser in the form of - 1 M
 - i. cookies
 - ii. passwords
 - iii. browsing history
 - iv. All of these
3. A _____ is a person who deliberately sows discord on the Internet by starting quarrels or upsetting people, by posting inflammatory or off-topic messages in an online community. 1 M

- i. Digital Citizen
 - ii. Netizen
 - iii. Internet Troll
 - iv. None of the above
4. What will be returned by the given query? 1 M
SELECT INSTR('TODAY IS A GIFT', 'GOOD');
i. 0
ii. 1
iii. NULL
iv. Error
5. If column "Marks" contains the data set (5000,8000,NULL,5000,8000), what will be the output after the execution of the given query? 1 M
SELECT AVG (Marks) FROM student;
i. 5200
ii. 13000
iii. 6500
iv. NULL
6. Which of the following protocols is used in real-time internet-based communication? 1 M
i. VoIP
ii. SMTP
iii. POP3
iv. MIME
7. If on '2022-11-04', it was Friday, what will be the output of following SQL command? 1 M
Select dayname('2022-11-04')+1;
i. Error
ii. Friday
iii. Saturday
iv. 5
8. Which of the following is not a text function? 1 M
i. TRIM()
ii. MOD()
iii. LEFT()
iv. MID()
9. Sam is a database analyst. He wants to get the current system date and time using SQL. Help him in choosing the correct function from the options given below - 1 M

- i. NOW()
 - ii. CURDATE()
 - iii. TIME()
 - iv. DATETIME()
10. 'S' is a series object . What will be the output of the following statement: 1 M
S.tail(-1)
- i. Will return all rows except the first row
 - ii. Will return all rows except the last row
 - iii. Will return the first row
 - iv. Will return the last row
11. Size and values of data of Series is : 1 M
- i. mutable, immutable
 - ii. immutable, mutable
 - iii. mutable, mutable
 - iv. immutable, immutable
12. Which of the following code will display the total number of rows of the DataFrame 'School'? 1 M
- i. print(len(School.axes[row]))
 - ii. print(len(School.len(0)))
 - iii. print((School.len(axes=0)))
 - iv. print(len(School.axes[0]))
13. For 'n' devices in a network, what is the number of cable links required for a mesh topology? 1 M
- i. $n*n$
 - ii. $n(n-1)$
 - iii. $(n-1)/2$
 - iv. $n*(n-1)/2$
14. Which SQL statement returns the total number of records present in a table? 1 M
- i. distinct()
 - ii. count()
 - iii. sum()
 - iv. count(*)
15. A patent protects an invention for _____ years, after which it can be freely used. 1 M
- i. 10
 - ii. 15

iii. 20

iv. 50

16. The emails we write, or responses or posts we make on different websites or mobile apps, etc. are an example of _____ . 1 M

i. Cyber Crime

ii. Active Digital Footprint

iii. Passive Digital Footprint

iv. Digital Footprint

Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as

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 but R is False

iv. A is false but R is True

17. **Assertion (A):** Digital Footprints cannot be permanently deleted. 1 M

Reason (R): Culprits who spread hate, bully others or engage in criminal activities are traced and apprehended.

18. **Assertion (A):** - The rename() function can be used to rename both the rows and columns of a DataFrame. 1 M

Reasoning (R):- In the rename() function, if we pass a value for a column label that does not exist, it results in Error.

SECTION B

19. Why a switch is called an intelligent hub? 2 M

OR

Mention two points of difference between analog and digital signal.

20. Swasthik, a database administrator needs to display number of people in each category of payment mode from the table SALE in ascending order of payment mode. He is encountering an error while executing the following query: 2 M

SELECT PaymentMode, COUNT(PaymentMode) FROM SALE ORDER

BY Paymentmode GROUP BY Paymentmode;

Help him in identifying the reason of the error and write the correct query by suggesting the possible correction (s).

21. What is the purpose of GROUP BY clause in SQL? Explain with the help of a suitable example. 2 M

22. Write a program to create a DataFrame using a dictionary of lists that stores **House Name** and **Name** of house leaders of each house of your school. 2 M

Note: Assume four house names are Shivalik, Nilgiri, Udaigiri and Aravali having Raman, Ravi , Hardik, Sourav as House Leaders name respectively and pandas library has been imported as pd.

23. List any four health hazards related to excessive use of technology. 2 M

OR

What do you understand by Net Etiquette? Mention any two such etiquettes?

24. What will be the output of the following statements 1 and 2: 2 M

```
import pandas as pd  
empno=[101,102,103,104,105]  
p=pd.Series(empno)  
print (p[p>103]) ----- Statement 1  
print(p[10]) ----- Statement 2
```

25. Carefully observe the following code: 2 M

```
import pandas as pd  
data = { 'Name': ['Edgar', 'Allan', 'Emily', 'Seneca', 'Walter'],  
        'Maths' : [10, 45, 89, 55, 60],  
        'Science' : [23, 70, 50, 12, 87],  
        'S.St' : [23, 70, 50, 62, 44],  
        'Hindi' : [23, 70, 50, 40, 76]  
        }  
df=pd.DataFrame(data)  
print(df)
```

Answer the following:

- i. Write statement to find the number of columns in the DataFrame **df**.
- ii. Write statement to fetch data type of each column of the DataFrame **df**.

SECTION C

26. Write outputs for SQL queries (i) to (iii) which are based on the given table **PRODUCT** : 3 M

TABLE: PRODUCT

PCode	PName	UPrice	Manufacturer	Mf_Date
P01	Washing Powder	50.75	HUL	2020-08-11
P02	Tooth Paste	32.50	P&G	2021-10-22
P03	Soap	15.00	Marico	2021-01-09
P04	Tooth Paste	32.50	P&G	2022-07-04
P05	Shampoo	120.60	Dabur	2021-05-18

- i. SELECT LENGTH(PName) FROM PRODUCT WHERE MONTH(Mf_Date)=10;
ii. SELECT COUNT(DISTINCT Manufacturer) FROM PRODUCT;
iii. SELECT ROUND (UPrice) FROM PRODUCT WHERE PName LIKE '%r';
27. Write a Python code to create a DataFrame from the Series given below: 3 M

```
seriesA = pd.Series([1,2,3,4,5],index = ['a', 'b', 'c', 'd', 'e'])  
seriesB = pd.Series([10,20,30,40,50],index = ['z', 'y', 'a', 'c', 'e'])
```

28. Consider the given DataFrame 'Student' : 3 M

	RollNo	Name	Marks
0	10	Karthik	23
1	20	Chinmay	70
2	30	Manthan	50
3	40	Sudarshan	12

Write suitable Python statement for the following:

- i. Add a column called 'GRADE' with the following data: ['C', 'A', 'B', 'D'].
ii. Delete the row with the index 1.
iii. Remove the column 'Marks'.
29. Palki received an e-mail . On clicking on a link in the mail “ ClickHere” , she was taken to a site designed to imitate an official-looking online shopping website. The website also offered her discount coupons for shopping upon submission of personal details. Identify the cyber crime being discussed in the 3 M

above scenario. Write few lines about it. Which is the primary law in India dealing with Cyber Crime?

OR

What is Intellectual Property Right (IPR)? Mention any two ways of protecting Intellectual Property Right (IPR). What is licensing?

30. Based on table **CARS** given here, write suitable SQL queries for the following: 3 M

CarNo	Type	Company	Price	Quantity
C1	SUV	Tata	120000	22
C2	Jeep	Mahindra	65000	15
C3	Hatchback	Skoda	38000	16
C4	Sedan	Maruti	45000	28
C5	Hatchback	Skoda	42000	10
C6	Sedan	Maruti	30000	12

- i. Display the total price of all the types of vehicles.
- ii. Display the count of the type of vehicles manufactured by each company.
- iii. Display the average price of each type of vehicle having quantity more than 10.

OR

Differentiate between ORDER BY and GROUP BY with the help of suitable example.

SECTION D

31. Write suitable SQL query for the following: 5 M

- i. Display the number of values in a column 'PRICE' of table 'PRODUCT' ignoring the NULL values.
- ii. To display 5 characters extracted from 3rd left character onwards from the string 'A THING OF BEAUTY IS JOY FOREVER'.
- iii. Round off the value 83.578 to two decimal place.
- iv. To extract the month from the date 1990-10-18.
- v. To compute 3 raised to the power remainder on dividing 12 by 5.

OR

Explain the following SQL functions using suitable examples.

- i. COUNT(*)
- ii. TRIM()

- iii. SUBSTR()
- iv. MONTHNAME()
- v. LOWER()

32. Petrichor is an online corporate training provider company for IT-related courses. The company is setting up their new campus in Pune. You as a network expert have to study the physical locations of various blocks and the number of computers to be installed. In the planning phase, suggest the best network-related solutions for their problems raised in (i) to (v), keeping in mind the distances between the buildings and other given parameters. 5 M

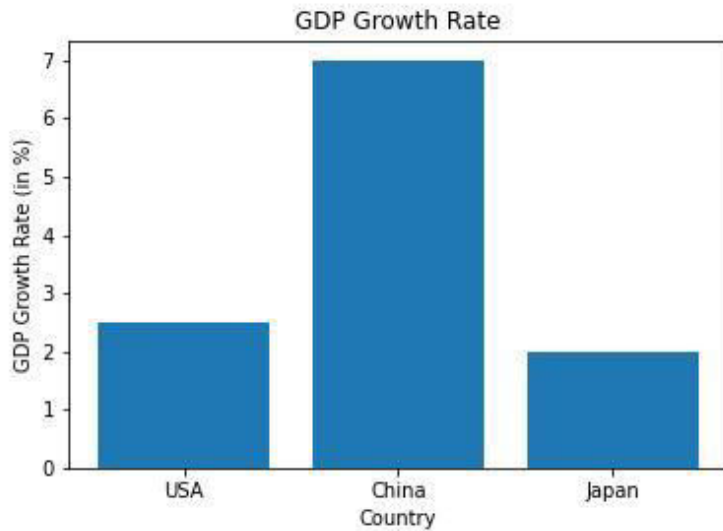
Distance between blocks:

Block (from)	Block (to)	Distance (in metres)
Administrative	Finance	60
Administrative	Faculty Studio	120
Finance	Faculty Studio	70

Also, the number of computers to be installed in each block are:

Block	Computers
Administrative	20
Finance	40
Faculty Studio	120

- i. Suggest the most appropriate block, where Petrichor should plan to install the server. Justify your answer.
 - ii. Suggest and draw the most appropriate block-to-block cable layout to connect all three blocks for efficient communication.
 - iii. Which type of network out of the following is formed by connecting the computers of these three blocks? LAN, MAN, WAN
 - iv. Which wireless channel out of the following should be opted by Petrichor to connect to students from all over the world? Infrared, Microwave, Satellite.
 - v. Company is planning to get its website designed which will allow students to request for access to online library after registering themselves on its server. Out of the static or dynamic, which type of website will you suggest?
33. Write Python code to plot a bar chart for the GDP Growth Rate of top three countries as shown below: 5 M



Also give suitable python statement to save this chart.

OR

Write a python program to plot a line chart based on the given data to depict the marks scored by a student in four subjects.

Subject=['Maths','Science','Biology','IP']

Marks=[40,82,68,94]

SECTION E

34. Chinmay, a database administrator has designed a database for a retail chain store.

1+1+2
M

Help him by writing answers of the following questions based on the given table:

TABLE: SALE

SNO	SNAME	SALARY	BONUS	DOJ	STORETYPE
A01	VINAY	30000	120.78	2021-06-22	Grocery
A02	SAM	50000	880.70	2020-05-30	Hardware
B01	JOE	42000	NULL	2021-03-12	Health
B02	BHUVAN	65000	92.50	2015-09-11	Grocery
C01	GIRISH	75000	NULL	2022-06-26	Health

- i. Write a query to display the name of the salesmen who have not received any bonus.
- ii. Write a query to display the highest salary.
- iii. Write a query to display the name of the salesman who have 'i' as the second character in their name.

OR (Option for part iii only)

Write a query to display the year of joining of all the employees except who work in the Health store.

35. Ms. SreeLakshmi, a data analyst has designed the DataFrame df that contains data about a shop. Answer the following questions: 1+1+2
M

	Item	Quantity	City	Price
101	Biscuit	100	Delhi	10
102	Jam	110	Kolkata	25
103	Coffee	200	Kolkata	55
104	Sauce	56	Mumbai	55
105	Chocolate	70	Delhi	25

Predict the output of the following python statements:

- i. df.ndim
- ii. df.loc[101:102,'City']
- iii. Write python statement to display only those data whose price is greater than 25.

OR (Option for part iii only)

Write Python statement to compute and display 10 % of the Price column of the above given DataFrame.