BK BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS

SENIOR SECONDARY CO-ED DAY CUM BOYS' RESIDENTIAL SCHOOL

PRE BOARD -01 EXAMINATION 2023-24

INFORMATICS PRACTICES (065)

Class : XII SCIENCE/COMMERCE/ARTS **Duration : 3 Hrs**

Date : 19-12-2023 **Max. Marks : 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 02 questions carrying 04 marks each.
7. Section E has 03 Long Answer type questions carrying 05 marks each.
8. All programming questions are to be answered using Python Language only.

Section-A

1. How can individuals protect themselves from identity theft ? 1
(a) Share personal information freely on social media (b) Use the same password for all online accounts (c) Never check bank statements (d) Shred sensitive documents, use strong passwords, and monitor financial accounts

2. Which Python command can be utilized to create a histogram using the data in a list named that represents scores of students in an exam ? 1
(a) plt.hist(values) (b) seaborn.histplot(values) (c) plt.plot_histogram(values)
(d) numpy.histogram(values)

3. Which network topology typically results in less wire length usage as compared to others ? 1
(a) Star topology (b) Mesh topology (c) Bus topology (d) Hybrid topology

4. _____ is a cyber-attack method that involves sending fraudulent emails or messages to trick individuals into revealing sensitive information, such as login credentials or financial data ? 1
(a) Malware Infection (b) DDoS Attack (c) Phishing (d) SQL Injection

5. Which environmental issue is associated with electronic waste? 1
(a) Ocean Acidification (b) Air Pollution (c) Noise Pollution (d) Water Scarcity

6. To get the number of dimensions of a Series object, _____ attribute is displayed. 1
(a) Index (b) Size (c) Itemsize (d) Ndim

7. What will be correct syntax for pandas series? 1
(a) pandas_Series(data, index, dtype) (b) panda.series(data, index, dtype)
(c) pandas.Series(data, index, dtype) (d) panda_Series(data, index, dtype)

8. To display third element of a Series object S, you will write_____. 1
```
import pandas as pd
list1=[10,20,30,40,50]
S = pd.Series(list1)
print(S[ ])
```
(a) S[:3] (b) S[2] (c) S[3] (d) S[:2]

9. Which of the following command will show the last 3 rows from a Pandas Series named NP? 1
(a) NP.Tail( ) (b) NP.tail(3)
(c) NP.TAIL(3) (d) All of the above

10. Assertion (A) Cookies are small text files stored locally by the client's web browser to remember the "name value pair" that identifies the client. 1
Reason (R) Cookies are primarily used to track users' physical locations.
(a) Both A and R are true and R is the correct explanation for A
(b) Both A and R are true but R is not the correct explanation for A
(c) A is True but R is False
(d) A is false but R is True

11. In SQL, which of the following will select only one copy of each set of duplicate rows from a table. 1
(a) SELECT UNIQUE (b) SELECT DISTINCT (c) SELECT DIFFERENT (d) All of these.

12. Which operator can take wild card characters for query condition? 1
(a) BETWEN (b) LIKE (c) IN (d) NOT

13. Repeaters work on the _____ layer. 1
(a) Network Layer (b) Physical Layer (c) Application Layer (d) All of the Above

14. Assertion (A) DataFrame and its size is mutable in Pandas. 1
Reasoning(R) Data in a Series is organized in a single column.
(a) Both A and R are true and R is the correct explanation for A
(b) Both A and R are true but R is not the correct explanation for A
(c) A is True but R is False
(d) A is false but R is True

15. Identify FOSS from the following: 1
(a) MS Windows (b) CorelDraw (c) Photoshop (d) Linux

16. Which of the following is not protected through Intellectual Property Rights (IPR) ? 1
(a) Literary works (b) Real estate properties (c) Trademarks (d) Patented inventions

17. _____ is a networking device which can analyze the data being carried over a network, decide or alter how it is packaged, and send it to another network of a different type. 1
(a) Modem (b) Hub (c) Router (d) Switch

18. In which type of join, the join condition contains an equality operator ? 1
(a) Equijoin (b) Natural (c) Left Join (d) Right Join

Section- B

19. Rashi has just started using internet. Mention her any four net etiquette which she should follow in order to become a good netizen.

OR 2

Mention any four communication etiquette which one should follow while communicating on the internet.

20. Mr. Ankit is working in an organisation as data analyst. He uses Python Pandas and Matplotlib for the same. He got a dataset of the passengers for the year 2010 to 2012 for January, March and December. His manager wants certain information from him, but he is facing some problems. Help him by answering few questions given below: 2

	Year	Month	Passengers
0	2010	Jan	25
1	2010	Mar	50
2	2012	Jan	35
3	2010	Dec	55
4	2012	Dec	65

Complete the code to create the above data frame:

```
import pandas as _____________          #Statement 1
data={"Year":[2010,2010,2012,2010,2012],"Month":["Jan","Mar","Jan","Dec","Dec"],"Passengers":[25,50,35,55,65]}
df=pd._____________________(data)    #Statement 2
print(df)
```

21. Consider the given SQL QUERIES: 2
(i) To retrieve the length of the given string "CBSE BOARD SQP 2023!", which SQL function should you use?
(ii) To find out if symbol is present in the values of email id column or not, which function out of the following should be used?

22. Gaytri, a data analyst has stored four employee's name and their employee code in four dictionaries Structure of one such dictionary is as follows: 2
Emp1={'Ename': 'Emp Name', 'Ecode ':'Employee code'}
She clubbed these four dictionary into a list.
Write suitable Python code to store the required data of four employees in the form of list of dictionaries and create a DataFrame with appropriate column headings as shown below:

	Ename	Ecode
0	John	88
1	Emily	92
2	Michael	78
3	Sophia	95

23. Choose the most appropriate wireless communication channel in each of the following situations : 2
(i) Communication in hilly area.
(ii) Very fast communication between two offices in two different countries.

OR

Define the term hub. Also explain the brief active hubs and passive hubs.

24. Find the output of the following code: 2

```
import pandas as pd
lst1=[20,35,40]
ser1=pd.Series([20,35,40])
print(lst1+lst1)
print(ser1+ser1)
```

25. Predict the output of the following queries : 2
i. SELECT INSTR(RIGHT('EXAM@2022', '2');
ii. SELECT MID('KENDRIYA VIDYALAYA',10,5);

OR

Write any two Date/Time Function in SQL with proper example ?

Section-C

26. Predict the output of the following queries: 3

i. SELECT CONCAT(LEFT('India',5), RIGHT('is my country',7);
ii. SELECT INSTR('Informatics Practices@2022','for')+45;
iii. SELECT CONCAT(LEFT ('Knowledge'4),' Your abilities');

OR

Mr. Raman is working on a MySQL table named 'Stock having following structure:
He need to perform following task on the table:
i. To fetch first 4 characters from the PNAME column.
ii. To display the Total Stock (Qty* Price) with PName.
iii. To display details of product whose price is more than 1200 .
Suggest suitable SQL function for the same. Also write the query to achieve the desired task.

25 Consider the following records in 'Car' table and write the output of the given questions: 3

```
mysql> select * from car;
+-------+-----------+----------+------+--------+----------+
| carid | make      | model    | year | colour | price    |
+-------+-----------+----------+------+--------+----------+
|     1 | Toyota    | Camry    | 2020 | Silver | 25000.00 |
|     2 | Honda     | Civic    | 2019 | Blue   | 22000.50 |
|     3 | Ford      | Fusion   | 2021 | Red    | 28000.75 |
|     4 | Chevrolet | Malibu   | 2018 | Black  | 20000.25 |
|     5 | Nissan    | Altima   | 2022 | White  | 26000.00 |
|     6 | BMW       | 3 Series | 2020 | Grey   | 35000.00 |
+-------+-----------+----------+------+--------+----------+
```

a. SELECT Make, Model FROM Car WHERE Price>30000.00;
b. SELECT COUNT(*) AS 'TotalCars' FROM Car WHERE Year = 2020;
c. SELECT CarID, Make, Model FROM Car where price<22000;

26. What is the purpose of GROUP BY clause in MySQL? How is it different from ORDER BY clause? 3

27. Imagine a scenario where an individual, Alex, is concerned about his online privacy. 3
Alex has a social media presence and frequently posts updates, photos, and comments on various platforms. Additionally, Alex frequently uses mobile apps and visits websites for shopping and information.
a. Explain the concept of an active digital footprint, providing examples from Alex's online activities.
b. Describe the concept of a passive digital footprint and provide examples of how it is generated in Alex's online interactions.
c. Discuss the implications of both active and passive digital footprints for Alex's online privacy and security.

OR

With reference to 3R's, describe three essential approaches to manage electronic waste. Also, provide practical examples of how individuals can actively participate in each approach.

28. Write a program in python to create a DataFrame using any method like list, dictionary. 3

	A	B	C	D
Acct	99	94.0	92	97.0
Eco	90	94.0	92	97.0
Eng	95	89.0	91	89.0
IP	94	NaN	99	95.0
Math	97	100.0	99	NaN

Section-D

29. Wizbiz Corporation is recording the quarterly sales data of its three products through different departments. The data is as follows: 4

	Qtr1	Qtr2	Qtr3	Qtr4
Product1	3500	4200	4800	5100
Product2	2800	3100	3600	NaN
Product3	1500	1800	2100	2400
Product4	NaN	1500	1200	1500

Mr. Raj is tasked for writing a Python program. Help him to write correct code the create the DataFrame DF1:
Write a script that does the following:
(i) List the presence of missing data in whole DataFrame.
(ii) Fill the missing data with 999.
(iii) Print the DataFrame after filling missing value.
(iv) List the average sales of Qtr2
OR *(Option for part iv only)*
Write Python statement to display total sales done in ' and 'Qtr2 for each product.

30. Preeti manages database in a **BLOCKCHAIN** start-up. For business purposes, she created a table named **BLOCKCHAIN**. Assist her by writing the following areas : 4

TABLE: BLOCKCHAIN

id	user	value	hash	transaction_date
1	Steve	900	ERTYU	2020-09-19
2	Meesha	145	@345r	2021-03-23
3	Nimisha	567	#wert5	2020-05-06
4	Pihu	678	%rtyu	2022-07-13
5	Kopal	768	rrt4%	2021-05-15
6	Palakshi	534	wer@3	2022-11-29

(i) Write a query to display the year of oldest transaction.
(ii) Write a query to display the month of most recent transaction.
(iii) Write a query to display all the transactions done in the month of May.
(iv) Write a query to count total number of transactions in the year 2022.

31. Predict the output of following code fragments. For every next code fragment, consider that the changes by previous code fragment are in place. That is, for code fragment (b), changes made by code fragment (a) are persisting; for (c), changes by (a) and (b) are persisting and so on.

```
(a) import pandas as pd
columns=['2015','2016','2017','2018']
index=['Messi','Ronaldo','Neymar','Hazard']
df=pd.DataFrame(columns=columns,index=index)
print(df)
df.to_csv("c:\\one.csv")
```

Section-E

31. (b) 5

```
df['2015']['Messi']=12
df['2016','Ronaldo']=11
df['2017']['Neymar']=8
df['2018']['Hazard']=16
print(df)
 df.to_csv("c:\\two.csv",sep='@')
(c)
new_df=pd.read_csv("c:\\one.csv",index_col=0)
print(new_df)
(d)
 new_df=pd.read_csv("c:\\one.csv")
 print(new_df)
(e)
new_df=pd.read_csv("c:\\two.csv")
print(new_df)
```

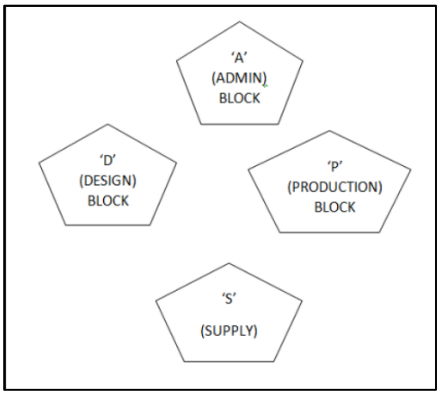
32. "Anutulya Creations"-A start-up fashion house has set up its main centre at Kanpur, Uttar Pradesh for its dress designing, production and dress supplying activities. It has 4 blocks of buildings. 5

Distance between the various blocks is as follows:

A to D 50 m
A to P 60 m
A to S 110m
D to S 60m
P to S 50m
P to D 150m

Numbers of computers in each block

Block A - 20
Block D - 80



Based on the above specifications, answer the following questions:
(a) Out of LAN, WAN and MAN, what type of network will be formed if we interconnect different computers of the campus? Justify.
(b) Suggest the topology which should be used to efficiently connect various blocks of buildings within Kanpur centre for fast communication.
Also draw the cable layout for the same.
(c) Suggest the placement of the following device with justification
i) Repeater
ii) Hub/Switch
(d) Now a day, video-conferencing software is being used frequently by the company to discuss the product details with the clients. Name any one video conferencing software. Also mention the protocol which is used internally in video conferencing software.

33. The height of 10 students of eighth grade are given below: 5
Height_cms=[145,141,142,142,143,144,141,141,143,144]
Write suitable Python code to generate a histogram based on the above data, along with an appropriate title and both axis labels.
Also give suitable python statement to save this chart.

OR

Write suitable Python code to create 'Favourite Hobby' Bar chart as show below: