BK BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
SENIOR SECONDARY CO-ED DAY CUM BOYS' RESIDENTIAL SCHOOL
PRE BOARD -03 EXAMINATION 2024-25

INDIAN PUBLIC SCHOOLS' CONFERENCE

INFORMATICS PRACTICES (065)
MARKING SCHEME

Class : XII SCIENCE/COMMERCE/ARTS **Duration : 3 Hrs**
Date : 10-01-2025 **Max. Marks : 70**
Admission No.: **Roll No.:**

Section-A

1. In _____ topology, the devices are arranged in the form of multiple branches in hierarchical manner. 1
(a) Star **(b) Tree** (c) Mesh (d) Bus

2. Function ____ can be used to drop missing values. 1
(a) fillna() (b) isnull() **(c) dropna()** (d) delna()

3. Which method is used to save the output of pyplot in the form of image file? 1
(a) savefig('filename') (b) save_fig('filename) (c) save_figure('filename')
(d) save_img('filename')

4. To skip first 5 rows of CSV file, which argument will you give in read_csv() ? 1
(a) skiprows = 5 (b) skip_rows = 5 (c) skip = 5 (d) noread=5

5. Ridhima purchased a licensed copy of a software and made additional copies without the permission of the copyright owner. This act of hers is known as _____. 1
(a) Identify Theft (b) Trade infringement (c) Patent **(d) Copyright Infringement**

6. Predict the output of the following query: 1
SELECT LCASE (MONTHNAME ('2025-01-09'));
(a) May (b) September (c) Sept **(d) January**

7. Predict the output of the following query: 1
Select Power(2, Mod(17,3));
(a) 8 (b) 1 (c) 0 **(d) 4**

8. The Cartesian product is also called ____ join. 1
(a) Equi-Join (b) Natural Join **(c) Unrestricted Join** (d) Restricted Join

9. The purpose of GROUP BY clause in SQL is to : 1
(a) Filter records after aggregate function (b) Create a table
(c) Group rows in a table based on the value of a column (d) Sort the result.

10. When creating a pandas series , the index acts as : 1
(a) Labels (b) Keywords (c) Identifiers (d) Variables

11. Which of the following belong to the search engine ? 1
(a) Google (b) Chrome (c) Opera (d) Safari

12. State whether the following statement is True or False: 1
Rows of a table are referred to as attributes. **(False)**

13. Assertion (A) List of dictionaries can be passed to form a DataFrame. 1
Reasoning(R) Keys of dictionary are taken as row names by default.
(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

14. Assertion (A) Spyware are not harmful as they do not damage data. 1
Reasoning© Spyware track data about user and sell it to others hampering your data privacy.
(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. What is an example of e-waste ? 1
(a) a ripened banana **(b) an old computer** (c) old clothes (d) empty soda cans

16. Which of the following is a DDL command ? 1
(a) SELECT **(b) ALTER** (c) INSERT (d) UPDATE

17. Which of the following types of table constraints will prevent the entry of duplicate rows ? 1
(a) Unique (b) Distinct **(c) Primary Key** (d) NULL

SECTION - B

18. Write a python program to create the following DataFrame using a list of dictionaries 2

	RollNo	Name	Age	Marks	Grade
10	101	Subrato	15	77.9	11B
20	102	Krishna	14	70.4	11A
30	103	Pranshu	14	60.9	11B

Ans:
```
import pandas as pd
data={'RollNo':[101,102,103],'Name':['Subrato','Krishna','Pranshu'],'Age':[15,14,14],
'Marks':[77.9,70.4,60.9],'Grade':['11B','11A','11B']}
df=pd.DataFrame(data)
df
```

19. Consider the following Series object **S_amt** 2

Table	350
Chair	200
Sofa	800
Stool	150

(a) Write the coding in python that will display name of furniture having rent more than 250.
(b) Write the Python coding to name the series as **'Furniture'**

Ans: (a) print(S_amt[S_amt>250) (b) S_amt.name = 'Furniture'

20. Define the following terms and give example. 2

(a) iteritems (b) iterrows

Ans: (a) It iterates over each index value (b) It iterates over each column as key-value pair with label as key and column value as series object.

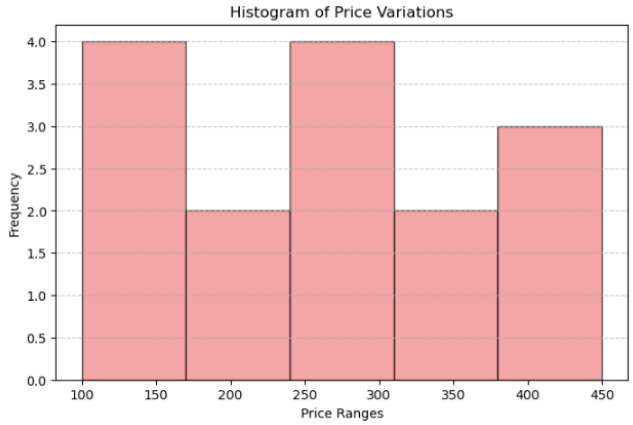
21. Consider the given dataframe ‘df1’: 2

	Name	Age	Marks
0	Amit	15	90.0
1	Bhavdeep	16	NaN
2	Reema	17	87.0

Write the output of the given command:
print(df1.marks/2)

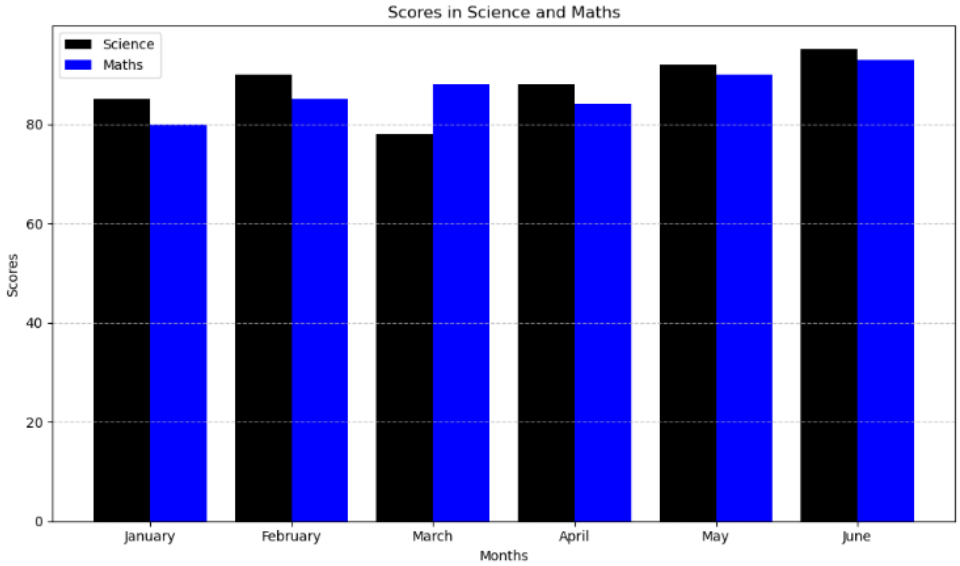
Ans: 0 45.0
1 NaN
3 43.5

22. Write a suitable python code to create a histogram as given below: 2



Ans:
```
import matplotlib.pyplot as plt
prices = [100, 200, 150, 300, 250, 350, 400, 450, 150, 100, 250, 300, 200, 350, 400]
plt.figure(figsize=(8, 5))
plt.hist(prices, bins=5, color='lightcoral', edgecolor='black', alpha=0.7)
plt.xlabel('Price Ranges')
plt.ylabel('Frequency')
plt.title('Histogram of Price Variations')
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.show()
```

23. Write a python code to create a bar graphs as given below: 2



Ans:
```
import matplotlib.pyplot as plt
import numpy as np
months = ['January', 'February', 'March', 'April', 'May', 'June']
science_scores = [85, 90, 78, 88, 92, 95]
maths_scores = [80, 85, 88, 84, 90, 93]
x = np.arange(len(months))
bar_width = 0.4
plt.bar(x - bar_width/2, science_scores, bar_width, label='Science', color='black')
plt.bar(x + bar_width/2, maths_scores, bar_width, label='Maths', color='blue')
plt.xlabel('Months')
plt.ylabel('Scores')
plt.title('Scores in Science and Maths')
plt.xticks(x, months)
plt.legend()
plt.show()
```

24. A SQL table ITEMS contains the following columns: INO, INAME, QUANTITY, PRICE, DISCOUNT. Write the SQL query to remove the column DISCOUNT from the table. 2

Ans: ALTER TABLE ITEMS DROP COLUMN DISCOUNT;
OR ALTER TABLE ITEMS DROP DISCOUNT;

25. Given a table 'SALESMAN'. Write the given SQL queries: 2

Salesid	sname	salary	bonus	dateofjoin
101	John Doe	50000.00	5000.00	2020-06-15
102	Alice Smith	55000.00	4500.00	2019-08-10
103	Robert Brown	48000.00	4000.00	2021-01-20
104	Emily Davis	60000.00	6000.00	2018-12-05
105	Michael Wilson	52000.00	4700.00	2020-11-30
106	Sophia Taylor	49000.00	4300.00	2021-04-17
107	Daniel Miller	58000.00	5500.00	2019-03-12

(a) To display salesman name and bonus after rounding off to zero decimal places.
(b) To display the position of occurrence of the string "ta" in salesman names.

Ans: (a) SELECT sname, ROUND(bonus, 0) AS RoundedBonus FROM SALESMAN;
(b) SELECT sname, INSTR(sname, 'ta') AS Position FROM SALESMAN;

26. What are aggregate functions in SQL? Name any two example with their output. 2

Ans: Aggregate functions in SQL perform calculations on multiple rows of data and return a single result. These functions are often used in combination with the GROUP BY clause to group data and summarize values for specific categories.
Example: SUM()
SELECT SUM(salary) AS TotalSalary FROM Employees;
AVG() SELECT AVG(marks) AS AverageMarks FROM Students;
Other examples: Count( ), Min( ), Max( )

27. What is the difference between a WHERE clause and a HAVING clause of SQL select statement ? Give suitable example. 2

Ans:

Aspect	`WHERE` Clause	`HAVING` Clause
Purpose	Filters rows before any grouping or aggregation occurs.	Filters groups or aggregated data after the `GROUP BY` operation.
Stage of Execution	Applied before the aggregation phase.	Applied after the aggregation phase.
Usage with Aggregate Functions	Cannot use aggregate functions like `SUM`, `AVG`, etc., directly.	Can use aggregate functions like `SUM`, `AVG`, etc., directly.
Scope	Operates on individual rows of the table.	Operates on grouped rows.

28. What do you mean by Network Topology ? What are the most popular topology ? Define them with proper diagram. 2

Ans: **Network Topology** refers to the arrangement of various elements (links, nodes, etc.) in a computer network.
Bus, Star, Tree, Mesh, Hybrid

29. Differentiate between Static and Dynamic webpage. Give suitable example. 2

Ans: Static webpages are web pages with fixed content that does not change unless manually updated by a developer. The same content is served to every user who accesses the page, making it straightforward and easy to host.
Dynamic webpages can display different content and allow user interaction by generating pages in real time. They are often driven by databases and server-side scripting languages, allowing for personalized experiences.

30. Sumit got good marks in all the subjects. His father gifted him a laptop. He would like to make Sumit aware of health hazards associated with inappropriate and excessive use of laptop. Help his father to list the points which he should discuss with Sumit. 2

Ans: a) Impact on bones and joints b) Eye Strain c) Sleep issues d) Mental health issues
e) Internet addiction disorder.

31. Anjali, a student of class 12. One day she received a SMS about winning a lottery and to claim prize money she needs to share her bank account details. By mistake, she had shared her personal bank details and the very next day a good amount of money was deducted from her account. 2
Based on the above information, answer the questions given below:
(a) Identify the type of cybercrime she is a victim of .
(b) How she should have handled the situation to avoid being the victim ?

Ans: (a) Phishing (b) Verify the Source ,Avoid Sharing Personal Details, Look for Signs of Fraud Use Secure Communication Channels, Report the Incident

32. Write a python program to create a Series as shown below using a dictionary. Note that left column indicates the indices and the right column displays the data. 2

Rahul Anand	32
Mohak Girdhar	25
Rajesh Tyagi	45
Rohan Malik	30

Ans:
```
import pandas as pd
s1=pd.Series(data=[32,25,45,30],index=[‘ Rahul Anand’,’ Mohak Girdhar’,’ Rajesh Tyagi’,
’ Rohan Malik’])
print(s1)
```

33. Bipin wants to send a report on his trip to the North east to his mentor. The report contains images and videos. How can he accomplish his task through the internet ? 2

Ans: By uploading files to a cloud storage service like Google Drive, Dropbox or OneDrive.

34. Write two importance of Cyber law ? 2

Ans: It covers all transactions over the Internet. It keeps eyes on all the activities over the Internet.

35. Cite examples depicting that you werea victim of following cybercrime. Also cite provisions in IT act to deal with such a crime. (a) Identity theft (b) Credit Card account theft 2

Ans: (a) Section 66 of IT Act 2000. Stealing of personal details and misused by the hacker
(b) Someone make unathorised purchase. Cyber Appellate Tribunal is there to resolve disputes.

36. Identify the problem with the following SQL query and write the correct SQL query: 2
Select house, count(*) from student where count(*) > 5 group by house;

Ans: Select house, count(*) from student group by house having count(*) > 5:

37. Table Employee has 4 records and Table Dept has 3 records in it. Mr. Jain wants to display all information stored in both of these related tables. He forgot to specify equi-join condition in the query. How many rows will get displayed on execution of this query ? 2

Ans: 12 rows (4 X 3)

Section-C

38. A dictionary ‘Toys’ contains the following: 3
Toys = {‘Name’:[‘Doll’, ‘Ludo’, ‘Chess’ , ‘Blocks’], ‘Price’:[400,250,300,150]}
Write statements for the following:
i) Create a dataframe named “Stock” using dictionary ‘Toys’.
ii) Add a column called ‘Discount’ with the following data. [30,40,15,25]
iii) Delete column discount with all values

Ans:
```
import pandas as pd
# i) Create a dataframe named “Stock” using dictionary ‘Toys’.
Toys = {'Name': ['Doll', 'Ludo', 'Chess', 'Blocks'], 'Price': [400, 250, 300, 150]}
Stock = pd.DataFrame(Toys)
print("DataFrame 'Stock':\n", Stock)
# ii) Add a column called ‘Discount’ with the following data. [30, 40, 15, 25]
Stock['Discount'] = [30, 40, 15, 25]
print("\nDataFrame after adding 'Discount' column:\n", Stock)
# iii) Delete column 'Discount' with all values
Stock.drop(columns=['Discount'], inplace=True)
print("\nDataFrame after deleting 'Discount' column:\n", Stock)

plt.xticks(x, prodf["State"])  # Set the x-axis ticks to the state names
plt.tight_layout()
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.show()
```

39. Write a SQL command to create a table “ITEM” of the given specification: 3

COLUMN_NAME	DATA TYPE	CONSTRAINTS
Product Id	Numeric(10)	Primary Key
Pname	Varchar (20)	Not Null
Price	Numeric(10)	
Qty	Numeric (5)	

Ans: CREATE TABLE ITEM (Product_Id INT(10) Primary Key, Pname VARCHAR(20) NOT NULL, Price INT(10), Qty INT(5));

40. Consider the following tables BOOKING and FLIGHTS. Write SQL queries for the following statements. 3

Table: **BOOKING**

TICKETNO	PNAME	SOURCE	DESTINATION	FARE	FID
5001	TOM	BAN	DEL	7000	101
5002	BOB	BAN	KOL	7500	101
5003	SID	DEL	MUM	6000	102
5004	ROY	DEL	MUM	6000	103
5005	KAY	MUM	DEL	6000	102

Table: **FLIGHTS**

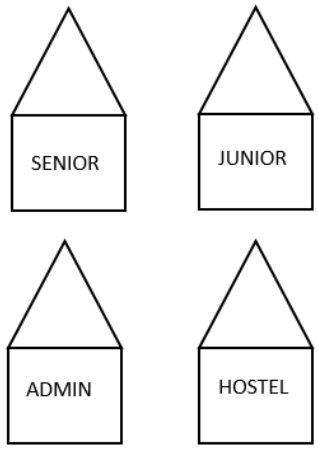
FID	MODEL	COMPANY
101	747	BOEING
102	320	AIRBUS
103	767	AIRBUS
104	365	BOEING

(a) To display the flightid and their model which have the highest fare.
(b) To display the details of the passenger whose ticket number is 5002.
(c) To display the passenger’s name along with their flight company.

Ans. (a) SELECT flightid, model FROM flights WHERE fare = (SELECT MAX(fare) FROM flights);
(b) Select * from BOOKING where ticketno = 5002;
(c) Select pname, company from BOOKING, FLIGHT where BOOKING.FID = FLIGHT.FID;

Section-D

41. Jain International School, Bengaluru is setting up the network between it different wings of school campus. There are 4 wings as SENIOR(S), JUNIORS (J), ADMIN (A) and HOSTEL (H). 4



Number of Computers installed at various wings are as follows:

Wing A to Wing S	100 m
Wing A to Wing J	200 m
Wing A to Wing H	400 m
Wing S to Wing J	300 m
Wing S to Wing H	100 m
Wing J to Wing H	450 m

Wings	Number of Computers
Wing A	20
Wing S	150
Wing J	50
Wing H	25

i) Suggest the best wired medium and draw the cable layout to efficiently connect various wings of Jain International School, Bengaluru.
ii) Name the most suitable wing where the server should be installed. Justify your answer.
iii) Suggest a device that shall be needed to provide wireless Internet access to all smart phone/laptop users in the campus of Jain International School, Bengaluru.
iv) Suggest a device / software and its placement that would provide data security for the entire network of the school.

Ans. i) LAN ii) Since the Wing S is having the greatest number of computers that is 150. So as per 80-20 rules, the most suitable place to set up the server is the Wing S.
iii) Wireless Access Point (WAP) like Router iv) Next-Generation Firewall (NGFW) like Fortigate, Cisco

******* BEST OF LUCK *******