Exam:	**First Prelim Exam 2024 - 2025**	
Grade:	**12**	
Subject:	**Informatics Practices(065)**	
Date:	**22.11.2024**	
Max. Marks:	**70 Marks**	
Duration:	**3 Hrs.**	
Roll No.:	_____	

General Instructions:

   i.   *Please check this question paper contains 37 questions.*
   ii. *All questions are compulsory. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions*
   iii. *The paper is divided into 5 Sections- A, B, C, D and E.*
   iv. ***Section A*** *consists of 21 questions (1 to 21). Each question carries 1 Mark.*
   v.   ***Section B*** *consists of 7 questions (22 to 28). Each question carries 2 Marks.*
   vi. ***Section C*** *consists of 4 questions (29 to 32). Each question carries 3 Marks.*
   vii. ***Section D*** *consists of 2 case study type questions (33 to 34). Each question carries 4 Marks.*
   viii. ***Section E*** *consists of 3 questions (35 to 37). Each question carries 5 Marks.*
   ix. *All programming questions are to be answered using **Python Language only**.*
   x.   *In case of MCQ, text of the correct answer should also be written.*

Section-A (21 x 1 = 21 Marks)

(Multiple Choice Question)

Q.1.   State whether the following statement is True or False: [1]
       The index of a Series must be unique.

Q.2.   The purpose of HAVING clause in a SQL statement is to: [1]
       (A) Filter rows based on a specific condition   (B) Group based data under set condition
       (C) Specify the columns to be displayed   (D) Sort the result based on a column

Q.3.   Identify the networking device responsible for amplifying the strength of the signal over long   [1]
       distance.
       (A) Switch   (B) Hub   (C) Repeater   (D) Router

Q.4.   Identify the SQL command used to define primary key on a column after creation of the table.   [1]
       (A) Alter Table   (B) Update Table   (C) Both A and B   (D) None of these

Q.5.   Technology not protected by copyright and available to everyone, is categorized as: [1]
        (A) Proprietary   (B) Open Source   (C) Shareware   (D) Experimental

Q.6.   Consider a Dataframe df1. Which of the following will display first two columns of a Dataframe? [1]
       (A) df1.loc[:2]   (B) df1.iloc[:,:2]   (C) Both A and B   (D) None of these

Q.7.   Which of the following is correct command to install matplotlib library?   [1]
       (A) pip install matplotlib   (B) pip install pandas (C) install matplotlib   (D) None of these

Q.8.   State whether the following statement is True or False: [1]
       WHERE conditions are applicable on group of rows.

Q.9.   The correct statement to read from CSV file in a dataframe df1 is: [1]
       (A) df1.to_csv(path of file)   (B) df1=pandas.read_csv(path of file)
       (C) df1=pandas.read(path of file)   (D) csvfile.read_csv(df1)

Q.10. Jiya sets up her own company to sell her own range of clothes on facebook. What type of [1]
Intellectual Property can she use to show that the clothes are made by her company?

(A) Patents   (B) Copyright   (C) Design   (D) Trademark

Q.11. To remove the leading space from data values in a column of MySQL table, we use [1]

(A) Left( )   (B) Right( )   (C) Trim( )   (D) Ltrim( )

Q.12. A _____ is a device that connects the organization's network with the outside [1]
world of the Internet.

(A) Hub   (B) Modem   (C) Gateway   (D) Repeater

Q.13. The following code creates a dataframe named 'df1' with _____ columns. [1]

import pandas as pd

ls1=[{'a':10 'b':20},{'a':5, 'b':10, 'c':20}]

df1 = pd.DataFrame(ls1)

(A) 1   (B) 2   (C) 3   (D) 4

Q.14. _____ are the attempts by individuals to obtain confidential information from you [1]
through an original looking site and URL.

(A) Phishing   (B) Spoofing   (C) Eavesdropping   (D) Pharming

Q.15. Based on the Series s1 given below. [1]

```
a    10
b    20
c    30
d     5
e     7
f     9
g    12
```

Which of the following code will print Series in reverse order?

(A) s1[: -7]   (B) s1[7: 0]   (C) s1[: :-1]   (D) s1.T

Q.16. Which of the following function returns a string type value? [1]

(A) mod( )   (B) instr( )   (C) substr( )   (D) dayofmonth( )

Q.17. Fill in the Blank [1]

When we create Dataframe from list of dictionaries, then number of columns in DataFrame is equal
to the _____ .

(A) maximum number of keys in first dictionary of the list.

(B) maximum number of different keys in all dictionaries of the list.

(C) maximum number of dictionaries in the list.

(D) None of the above

Q.18. Which of the following is used for 2D plots in Python? [1]

(A) Pandas   (B) math   (C) seaborn   (D) matplotlib

Q.19. Which device is used to transfer communication signals over a long distance? [1]

(A) Router   (B) Repeater   (C) Amplifier   (D) All of these

Q-20 and Q-21 are Assertion (A) and Reason (R) Type questions. Choose the correct option as:

(A) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of
Assertion (A)

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of
Assertion (A)

(C) Assertion (A) is True, but Reason (R) is False

(D) Assertion (A) is False, but Reason (R) is True

Q.20. **Assertion (A):** Rows of a DataFrame can be selected by passing integer location to iloc[ ] method. [1]

Reason (R): Integer location can be passed to loc[ ] method.

Q.21. **Assertion (A):** In a table in SQL there may be only one Primary Key. [1]

Reason (R): Primary key unequally identifies records in a table.

Section-B (7 x 2 = 14 Marks)

Q.22 (A) Write a Python program to create a series object, Country using a list that stores the capital of [2] each Country.

(Note: Assume four countries to be used as index of the series object are India, UK, Denmark, and Thailand having their capitals as New Delhi, London, Copenhagen, and Bangkok respectively.

OR

(B) Mention a use for each of the following libraries in Python with syntax to use them in a Python Program.

    (a)   Pandas   (b)   Matplotlib

Q.23. What are digital footprints? What are the types of digital footprints? [2]

Q.24. Consider the string: "Sustainable Development". Write suitable SQL queries for the following: [2]

(A) To extract and display "Develop" from the string.

(B) Display the position of the first occurrence of "able" in the given string.

Q.25. (A) Write the difference between website and a web server. [2]

OR

(B) Define the term Cookies and Plug-ins.

Q.26. Explain the difference between: [2]

(A) Group By and Order By clause.

(B) Where clause and Having clause.

Q.27. Mention any two impacts of E-waste on humans and on environment. [2]

Q.28. (A) Based on the Series S1 given below. [2]

0	89
1	75
2	45
3	35
4	82
5	25

What will be an output of the code?

(a) print(S1[S1 > 55])

(b) print(S1[0 : 4])

OR

(B) Carefully observe the following code:

import pandas as pd

dic1={'pid':[101,102,103], 'PName':['Pari', 'Prerna', 'Pariniti'], 'Points':[4000,5000,6000]}

player = pd. DataFrame(dic1)

She decided print(player)

Write Python statements for the following:

(a) In the dataframe player created above, set the row labels as 'Player1', 'Player2', 'Player3'.

(b) Rename the column 'Points ' to 'Net Point' in the DataFrame Player.

Section-C (4 x 3 = 12 Marks)

Q.29. Samina has to prepare a project on "Digital India Initiative". She decided to get information from [3] the Internet. She downloaded three web pages(page1, page2, page3) containing information on Digital India Initiative. Which of the following steps taken by Samina is an example of Plagiarism or copyright Infringement?

(a) She read a paragraph on "Digital India Initiative" from webpage 1 and rephrased it in her own words.
   She finally pasted the rephrased paragraph in her project.

(b) She downloaded 3 images of "Digital India Initiative" from webpage She made a collage for her project using these images.

(c) She downloaded "Digital India Initiative" icon from web page3 and pasted it on the front page of her Project report.

Q.30. (A) Given below the Dataframe df1. Write sample code for (a) to (c). [3]

	Product	Price
0	Laptop	60000
1	Desktop	45000
2	Monitor	15000
3	Tablet	30000

(a) To display total number of elements.
(b) To display number of rows and columns.
(c) To display only last 3 records.

OR

(B) Consider the DataFrame df1 given below:

	ICode	Item	UnitPrice	Discount
0	101	Frock	700	10
1	102	Cot	900	25
2	103	Soft Toy	1100	15
3	104	Baby Socks	800	5
4	105	Baby Suit	600	10

Write sample code for (a) to (c).

(a) To add a column Total with values as UnitPrice * Discount in the above DataFrame.
(b) Change UnitPrice of Soft Toy from 1100 to 1500.
(c) Display detail of Baby Socks and Baby Suit only.

Q.31. (a) Write an SQL statement to create a table named Infant, with the following specifications:[2+1=3]

Column Name	Data Type	Key
ItemCode	Numeric	Primary Key
Name	Varchar(30)	
UnitPrice	Numeric	
Discount	Float(3,1)	
DateofPurchase	Date	

(b) Write SQL Query to insert the following data in the Infant Table.
   101, Frock, 700, 10, 2024-11-15

Q.32. (A) Based on the below given table Garment write suitable queries for the following: [3]

Table: Garment

Gcode	Gname	Size	Colour	Company
111	T-shirt	XL	Red	Raymond Lifestyle
112	Jeans	L	Blue	Siyaram
113	Skirt	M	Black	Monte Carlo
115	Trousers	L	Brown	Go Fashion
116	Ladies Top	L	Pink	Arvind Ltd
120	Frock	XL	Pink	Sangam

Sales		
Gcode	Price	Quantity
111	1400.00	5
112	1600.00	7
113	1100.00	12
115	1500.00	3

(a) Display the total number of different sizes.
(b) Display detail of Sales in decreasing order of Price.
(c) Display Gname, Size, Colour along with their Price from Garment and Sales table both.

OR

(B) Consider the table Flight and Reservation given below:

Flight			
Fcode	Fname	Source_city	Destination_city
F001	Indigo	Ahmedabad	Mumbai
F002	Air-India	Mumbai	New Delhi
F003	Go-Air	New Delhi	Kolkata
F004	Indigo	Kolkata	Mumbai
F005	Air-India	Mumbai	Ahmedabad
F006	Spicejet	Ahmedabad	Kolkata

Passenger			
Pcode	Fname	Lname	Fcode
P001	Riya	Desai	F001
P002	Rahul	Patel	F002
P003	Ajay	Singh	F005
P004	Ram	Singh	F002
P005	Sudhir	Chaudhary	F001
P006	Raman	Kumar	F003

Write appropriate SQL queries for the following:
   (a)   Display first 4 characters of all Source_city.
   (b)   Display the Fname from Flight Table and corresponding Fname and Lname from Passenger table.
   (c)   Add a column Fare of datatype float and size (11,2) in the Flight table.

Section-D (2 x 4 = 8 Marks)

Q.33. Write Python code to draw the following Line graph with all the specifications representing the [4] total sales in each quarter. Add the title as 'Sales Analysis', Quarter on X-axis, Sales on Y-axis. Color of line should be Red.

Sales Analysis
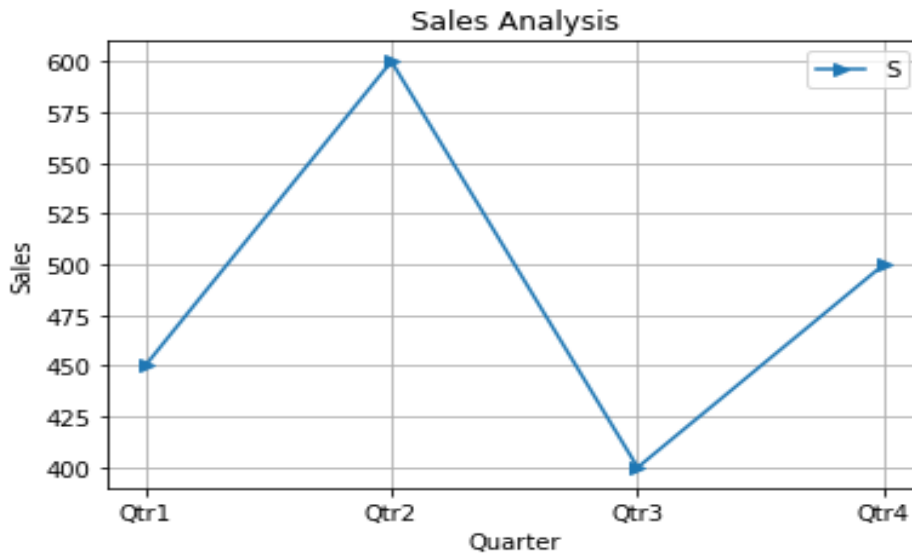
Q.34. (A) Consider a table SALESMAN with the following Data: [4]

SNO	SNAME	SALARY	BONUS	DATEOFJOIN
A01	Veena Manavi	30000	65.45	29-10-2021
A02	Surbhi Singh	50000	82.60	15-09-2022
B03	Nisha Thakral	30000	33.44	22-11-2022
B04	Lankesh Sharma	80000	NULL	19-05-2024
C05	Saurabh Gupta	40000	NULL	20-06-2023
C06	Tripti Sinha	66000	15.92	22-12-2021
D07	Mohit Sharma	72000	28.75	25-09-2024

Write SQL queries in MySQL for the following:
- (a) Display detail of SALESMAN who are not getting BONUS.
- (b) Display the month name for the date of join of SALESMAN.
- (c) Round the value of Bonus up to zero decimal places.
- (d) Display sum, minimum and average salary of Salesman.

OR

(B) Consider a table TRANSPORTER with the following Data:

Table : Transporter

| Order_Id	Item	Transportdate	Destination	Driverid
1	Television	2022-04-09	Ahmedabad	D1
2	Fridge	2023-10-06	Surat	D2
3	Furniture	2024-10-05	Rajkot	D3
4	Refrigerator	2023-11-11	Surat	D2
5	Television	2021-07-09	Ahmedabad	D1

Write the output of the following SQL Queries.
- (a) Select substr(Item,3,5) from Transporter;
- (b) Select Item from Transporter where month(Transportdate) = 4;
- (c) Select Instr(Destination, 'bad') from Transporter;
- (d) Select length(concat (Item , Destination))

From Transporter where Destination= 'Surat';

Section-E (3 x 5 = 15 Marks)

Q.35. DCIS Adalaj is setting up the network between its different wings of school campus. There are   [5]
There are 4 wings named as Senior(S), Junior(J), Admin(A), Hostel(H).
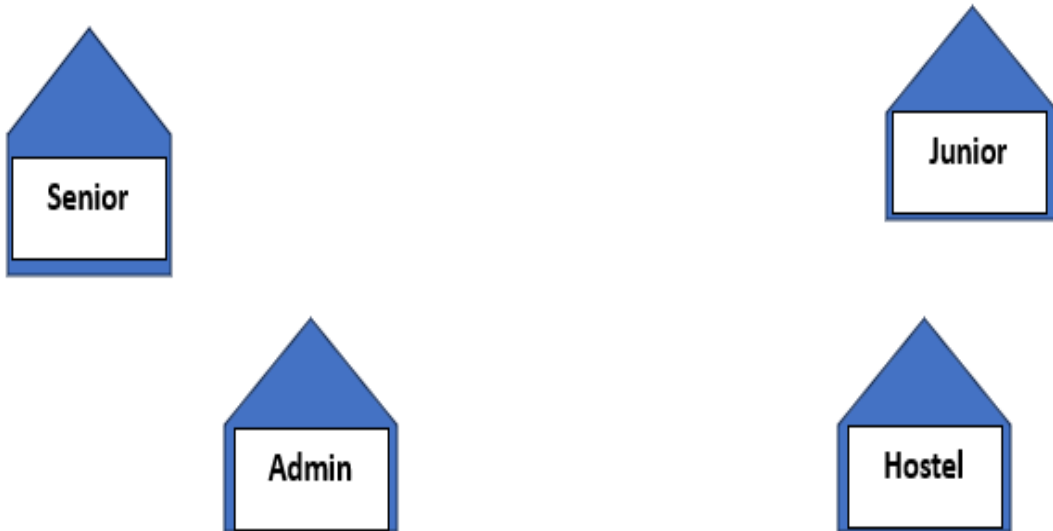
Center to center distances between various wings as per architectural drawings (in meters) are as follows:

Senior to junior	110m
Senior to Admin	115m
Senior to Hostel	35m
Junior to Hostel	25m
Junior to admin	100m

Expected number of computers in each wing is as follows:

Senior	50m
Admin	25m
Hostel	35m
Junior	45m

Answer the following:
- (a) Suggest the best wired medium and draw the cable layout to efficiently connect various wings.
- (b) Name the best suitable wing to install the server.
- (c) Suggest a device/software and its placement that would provide data security for the entire network.
- (d) Suggest a device that shall be needed to provide wireless Internet access to all devices in the campus.
- (e) Define URL? Also give example.

Q.36. Consider the DataFrame 'Mov' shown below: [5]

	Movie_ID	MName	Cost
0	M1	Sargam	500000
1	M2	Sajan	600000
2	M3	Shiva	700000
3	M4	Shingham	300000
4	M5	Surya	400000

Write Python statements for the DataFrame Mov to:

(a) Display only MName and cost.
(b) Display sum of the cost column.
(c) Remove record of mov 'Shiva'.
(d) Display the records of DataFrame row wise.
(e) Remove the column Movie_ID.

Q.37. (A) Write suitable SQL query for the following: [5]

a. To display current date and time.

b. To display 5 characters from 7th position of a string "International Tour".

c. To display remainder of 55 divided by 3.

d. To display last 5 character from all the rows of a column city in a table Product.

e. To keep only up to 1 decimal values from a number 1234.6789.

OR

(B) Given below the table Product:

Pid	PNAME	Mfg_Date	PRICE
P001	RAM	2022-08-10	5500
P002	ROM	2023-10-11	3500
P003	MODEM	2024-02-09	2500
P004	HUB	2023-05-06	1500
P005	SWITCH	2024-10-22	9500
P006	REPEATER	2022-08-10	6500

Write suitable SQL query/Command for the following:

a. To add a column Exp_date of data type date in a table Product.
b. To rename the column PNAME to ProductName in a table Product.
c. To display the detail of products whose name ends with 'M'.
d. To increase price of Product by 5%.
e. To display the detail of products whose Price is in the range of 4500 to 8500.