**SET-2**

# Kendriya Vidyalaya Sangathan, Regional Office, Bhopal

1st Pre-Board Exam

Class - XII - (2025-26)

INFORMATICS PRACTICES – Code No. 065

Time Allowed: 3 Hrs. Maximum Marks:70

General Instructions:

- All questions are compulsory.
- The examination paper contains five sections, from Section A to Section E.
- Section A consists of 21 questions (1 to 21). Each question carries 1 Mark.
- Section B consists of 7 questions (22 to 28). Each question carries 2 Marks.
- Section C consists of 4 questions (29 to 32). Each question carries 3 Marks.
- Section D consists of 2 questions (33 to 34). Each question carries 4 Marks.
- Section E consists of 3 questions (35 to 37). Each question carries 5 Marks.
- There is no overall choice. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions.
- All programming questions are to be answered using Python Language only.
- In case of MCQ, text of the correct answer should also be written.

| Q No | Section -A (21 x 1 = 21 Marks) | Marks |
|---|---|---|
| 1 | **State whether the following statement is True or False:**<br>In Pandas, the head() function is used to display the last few rows of a Series. | 1 |
| 2 | The purpose of ORDER BY clause in a SQL statement is to:<br>(A) Create a table (B) Filter rows based on a specific condition<br>(C) Specify the columns to be displayed (D) Sort the result based on a column | 1 |
| 3 | Namita has recently shifted to new city and new school. She does not know many people in her new city and school. But all of a student, someone is posting negative, demeaning comments on her social networking profile, school site's forum etc.<br>She is also getting repeated mails from unknown people. Every time she goes online, she finds someone chasing her online.<br>What is this happening to Namita?<br>(A) Namita has become a victim of cyber bullying and cyber stalking.<br>(B) Eaves dropping (C) Scam (D) Violation of IPR | 1 |
| 4 | Which of the following Python statements is used to write a Pandas DataFrame df to a CSV file?<br>(A) df.to_csv() (B) df.write_csv() (C) df.to_table() (D) df.export_csv() | 1 |
| 5 | What is the full form of NIC.?<br>(A) Network Interchange Card (B) Net Interconnect Card<br>(C) Network Interface Card (D) Network Interconnection Card | 1 |
| 6 | Identify the SQL command used to delete a relation (table) from a relational database.<br>(A) DROP TABLE (B) REMOVE TABLE (C) DELETE TABLE (D) ERASE TABLE | 1 |
| 7 | Sana developed a new software application and wants to prevent others from copying or distributing it without permission. Which IPR protection will help her?<br>(A) Trademark (B) Patent (C) Copyright (D) Design | 1 |

| | | |
|---|---|---|
| 8 | Which of the following is not an attributes of panda DataFrame<br>(A) Length (B) T (C) Size (D) Shape | 1 |
| 9 | Which of the following is an aggregate function:<br>(A) Upper() (B) Trim() (C) Date() (D) Sum() | 1 |
| 10 | After practical's, Pragyan left the computer laboratory but forgot to sign off from his email account. Later, his classmate Parvan started using the same computer. He is now logged in as Pragyan. He sends inflammatory email messages to few of his classmates using Pragyan's email account. Parvan's activity is an example of which of the following cyber-crime?<br>(A) Hacking (B) Identity theft (C) Cyber bullying (D) Plagiarism | 1 |
| 11 | Which SQL function extracts the day name (like Monday, Tuesday) from a date?<br>(A) DAY() (B) DAYNAME() (C) WEEKDAY() (D) DAYOFWEEK() | 1 |
| 12 | In Pandas the function used to delete a column in a DataFrame is<br>(A) remove (B) delete (C) drop (D) cancel | 1 |
| 13 | Which of the following is a responsible method for disposing of e-waste?<br>(A) Burning electronic devices in an open field<br>(B) Throwing electronic devices in regular garbage<br>(C) Recycling or donating old electronic devices<br>(D) Storing unused electronic devices indefinitely | 1 |
| 14 | Which SQL function is used to remove leading and trailing spaces from a string?<br>(A) LTRIM() (B) RTRIM() (C) TRIM() (D) REMOVE() | 1 |
| 15 | While creating a Series using a dictionary, the keys of the dictionary become:<br>(A) Values of the Series (B) Indices of the Series<br>(C) Data type of the Series (D) Name of the Series | 1 |
| 16 | In which topology do all computers share a single communication line or cable?<br>(A) Mesh (B) Star (C) Bus (D) Ring | 1 |
| 17 | If column 'FirstName' contains the data set ('Vijay', 'Sohan', 'Deepa', NULL) what will be the output after the execution of the given query?<br>SELECT COUNT(FirstName) FROM Student;<br>(A) 4 (B) 3 (C) NULL (D) 3 NULL | 1 |
| 18 | Fill in the Blank Boolean indexing in Pandas DataFrame can be used for _____.<br>(A) Creating a new DataFrame (B) Sorting data based on index labels<br>(C) Joining data using labels (D) Filtering data based on condition | 1 |
| 19 | Which SQL function is used to find the smallest value in a numeric column?<br>(A) MIN() (B) LEAST() (C) LOWER() (D) FIRST() | 1 |
| | **Q-20 and Q-21 are Assertion (A) and Reason (R) Type questions.**<br>**Choose the correct option as:**<br>(A) Both A and R are True, and R correctly explains A.<br>(B) Both A and R are True, but R does not correctly explain A.<br>(C) A is True, but R is False.<br>(D) A is False, but R is True. | |

| | | |
|---|---|---|
| 20 | **Assertion (A) :** When creating a Pandas Series from a NumPy array, the length of the index labels passed must match the size of the array to avoid a ValueError.<br>**Reason (R) :** If the length does not match, Pandas automatically fills the missing values with NaN to prevent errors. | 1 |
| 21 | **Assertion (A):** INSTR('Banana', 'n') returns 3.<br>**Reason (R):** INSTR() returns the position of the first occurrence of a substring. | 1 |
| **Q. No.** | **Section-B (7X2 = 14 Marks)** | **Marks** |
| 22 | (A) What is a Series in Pandas? Mention any one property of Series.<br>**OR**<br>(B) List any two ways to create a Series in Pandas. | 2 |
| 23 | What are intellectual property rights (IPR), and why are they important in the digital world? | 2 |
| 24 | Riya wants to create a Pandas DataFrame to store the following data:<br>**Name** **Marks**<br>Amit 85<br>Rina 92<br>John 78<br>Help her complete the code below to get the desired DataFrame.<br>Note : **data** is a dictionary of list<br>**import _____ as pd**<br>**data = _____**<br>**df = pd._____(data)**<br>**print(df)** | 2 |
| 25 (A) | Sahil, a Class X student, has just started understanding the basics of Internet and web technologies. He is a bit confused in between the terms "World Wide Web" and "Internet". Help him in understanding both the terms with the help of suitable examples of each.<br>**OR**<br>(B) Explain the concept of VoIP and mention one benefit of using it. | 2 |
| 26 | Write SQL queries to perform the following:<br>I. Display the year from the date **'2025-12-15'.**<br>II. Display the length of the string **'Kendriya Vidyalaya'.** | 2 |
| 27 | What do you understand by Net Etiquettes? Explain any two such etiquettes. | 2 |
| 28 (A) | Write the output of the following code:<br>**import pandas as pd**<br>**city = pd.Series(['Delhi', 'Mumbai', 'Kolkata'])**<br>**temp = pd.Series([32, 30, 28])**<br>**data = {'City': city, 'Temperature': temp}**<br>**df = pd.DataFrame(data)**<br>**df.rename(columns={'Temperature': 'Temp'}, inplace=True)**<br>**print(df)**<br>**OR**<br>(B) Write the output of the following code:<br>**import pandas as pd**<br>**roll = pd.Series([101, 102, 103])**<br>**names = pd.Series(['Rahul', 'Neha', 'Sana'])**<br>**data = {'RollNo': roll, 'Name': names}**<br>**df = pd.DataFrame(data)**<br>**df = df[['Name', 'RollNo']]**<br>**print(df)** | 2 |

<table>
<tr><th>Q No</th><th>Section-C (4X3 = 12 Marks)</th><th>Marks</th></tr>
<tr><td>29</td><td>Priya has received an SMS on mobile, asking her to provide the details of her old debit card in order to get new one. She clicked on the link in the message and entered the details of her debit card assuming that this message was from her bank.<br>I. Which cyber crime happened with her?<br>II. What immediate action should she take to handle it?<br>III. Is there any law in India to handle such issues. Discuss briefly.</td><td>3</td></tr>
<tr><td>30 (A)</td><td>Write a Python program to create a Pandas Series using a NumPy ndarray, where the product names are the indices and their prices (in ₹) are the values.<br>Product Price<br>Pen 10<br>Pencil 5<br>Notebook 40<br>Eraser 8</td><td>3</td></tr>
<tr><td></td><td>OR</td><td></td></tr>
<tr><td>(B)</td><td>Write a Python program to create the following Pandas DataFrame using a list of dictionaries:<br>Employee Department Salary<br>0 Ramesh HR 40000<br>1 Sita IT 50000<br>2 Mohan Accounts 45000</td><td></td></tr>
<tr><td>31</td><td>I. Write an SQL statement to create a table named DOCTORS, with the following specifications:<br>Column Name Data Type Key<br>DocID Integer Primary Key<br>DocName Varchar(30)<br>Specialization Varchar(25)<br>Fees Float(6,2)<br>II. Write an SQL query to insert the following record into the DOCTORS table:<br>(301, 'Dr Neha Verma', 'Cardiology', 1500.00)</td><td>2+1 =3</td></tr>
<tr><td>32 (A)</td><td>Given the following tables :<br>Table1 : STUDENTS
<table>
<tr><th>S_ID</th><th>NAME</th><th>AGE</th><th>CITY</th></tr>
<tr><td>1</td><td>Rahul</td><td>20</td><td>Delhi</td></tr>
<tr><td>2</td><td>Priya</td><td>22</td><td>Mumbai</td></tr>
<tr><td>3</td><td>David</td><td>21</td><td>Delhi</td></tr>
<tr><td>4</td><td>Neha</td><td>23</td><td>Bengluru</td></tr>
<tr><td>5</td><td>Khurshid</td><td>22</td><td>Delhi</td></tr>
</table>
Table2 : GRADES
<table>
<tr><th>S_ID</th><th>SUBJECT</th><th>GRADE</th></tr>
<tr><td>1</td><td>Math</td><td>A</td></tr>
<tr><td>2</td><td>English</td><td>B</td></tr>
<tr><td>3</td><td>Math</td><td>C</td></tr>
<tr><td>4</td><td>English</td><td>A</td></tr>
<tr><td>5</td><td>Math</td><td>B</td></tr>
</table>
Write SQL queries for the following :<br>I. To display the number of students from each city.<br>II. To find the average age of all students.<br>III. To list the names of students and their grades.</td><td>3</td></tr>
<tr><td>(B)</td><td>OR<br>Consider the following table TEACHER, which stores information about teachers.</td><td></td></tr>
</table>

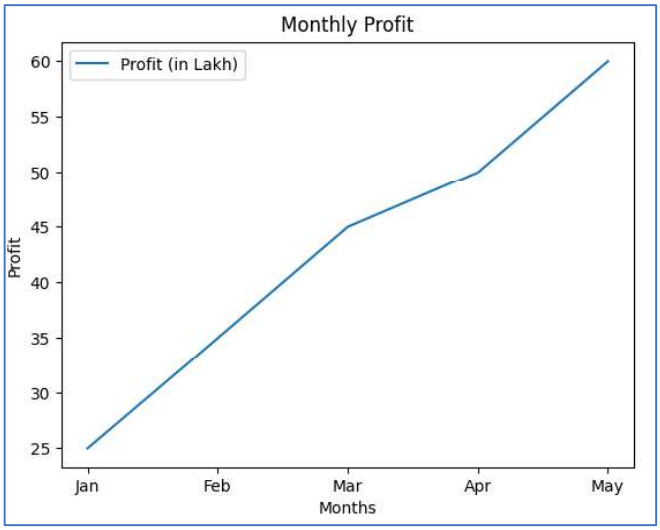
| TID | Name | Subject | Salary |
|---|---|---|---|
| 1 | Renu | Maths | 40000 |
| 2 | Manish | Physics | 45000 |
| 3 | Suman | Chemistry | 42000 |
| 4 | Pankaj | Physics | 48000 |

I. Suggest the Primary Key with justification.
II. Write an SQL command to add a new column, **Experience**, of type INTEGER.
III. Write the output of the following SQL query:
**SELECT Subject, COUNT (*) FROM TEACHER GROUP BY Subject;**

| Q No. | Section-D (2X4 = 8 Marks) | Marks |
|---|---|---|

33 Aman, a business analyst, is working on a Python program to create a line graph that represent the monthly profit (in Lakh) of a company over five months. However some parts of his code are incomplete. Help Aman by filling the blanks in the following program. **4**

| Month | Profit (in Lakh) |
|---|---|
| **Jan** | **25** |
| **Feb** | **35** |
| **Mar** | **45** |
| **Apr** | **50** |
| **May** | **60** |




**Help Aman to complete the code:**

**_____ as plt #Statement-1**
**month = ['Jan', 'Feb', 'Mar', 'Apr', 'May']**
**profit = [25, 35, 45, 50, 60]**
**_____ #Statement-2**
**plt.title('Monthly Profit')**
**plt.xlabel('Months')**
**_____ # Statement 3**
**plt.legend()**
**_____ #Statement-4**
**plt.show()**

I. Write the suitable code for the import statement in the blank space in the line marked as Statement-1.
II. Write the suitable code for the blank space in the line marked as Statement-2, which plots the line graph with the appropriate data and includes a label for the legend.
III. Fill in the blank in Statement 3 with the correct Y-axis label.

IV. Fill in the blank in Statement-4 with the appropriate Python code to save the graph as an image file named monthly_profit.png.

34 (A) Raghav is a clerical staff in a Doctor's Dispensary. He maintains records of visiting doctors in a table Doctor. Write queries of the following questions based on the given table. — 4

**Table: Doctor**

| Did | Dname | Dept | Charges | VisitDays |
|---|---|---|---|---|
| D01 | M Songara | ENT | 1100 | Mon |
| D02 | D Sharma | ENT | 1200 | Wed |
| D03 | S Tiwari | PAED | 5000 | Sat |
| D04 | Aman S | Ortho | 1500 | Sun |
| D05 | N Chopra | Ortho | 3700 | Thu |

I. To display the maximum Charges among the Ortho Doctors.
II. To display the doctor names in uppercase along with their department names.
III. To display each department and the total number of doctors in them.
IV. To display each department and the average charges in that department.

**OR**

(B) **Consider the following table and write the output of the following SQL Queries.**

**Table : ORDER**

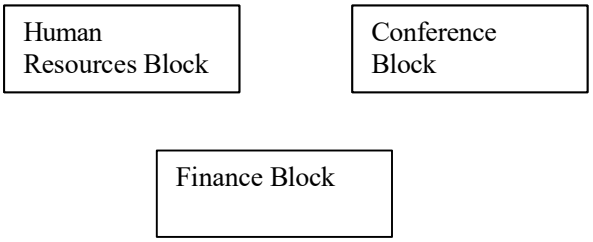
| OrderId | OrderDate | SalesPerson | OrderAmount |
|---|---|---|---|
| 0101 | 2015-09-12 | Ravi Kumar | 34000 |
| 0102 | 2015-08-15 | Rashmi Arora | 50000 |
| 0103 | 2015-11-01 | Ravi Kumar | 55000 |
| 0104 | 2015-12-09 | Manjeet Singh | 60000 |
| 0105 | 2015-11-10 | Rashmi Arora | 50000 |

I. SELECT OrderId, OrderAmount FROM Order WHERE OrderAmount BETWEEN 50000 AND 60000;
II. SELECT * FROM Order Where MONTH(OrderDate) = 12;
III. SELECT SUM(OrderAmount) FROM Order Where MONTHNAME(OrderDate) = 'November';
IV. SELECT COUNT(SalesPerson) AS Total_Order_Placed FROM Order WHERE YEAR(OrderDate) = 2016;

**Q No.** | **Section-E (3X5 = 15 Marks)** | **Marks**

35 Trine Tech Corporation (TTC) is a professional consultancy company. The company's head office is located in Mumbai while its branch office is in Bhopal. The Mumbai office consists of three departments : Human Resources Block, Conference Block, and Finance Block. — 5

**Physical location of the blocks of TTC**




| Blocks to block distance (in meter) | | |
|---|---|---|
| **Block (From)** | **Block (To)** | **Distance** |
| Human Resource | Conference | 120 |
| Human Resource | Finance | 40 |
| Conference | Finance | 80 |

| | | |
|---|---|---|
| | **Expected number of computers to be in each block**<br>**Block** \| **Computers**<br>Human Resource \| 120<br>Finance \| 25<br>Conference \| 90<br>As a network adviser, you have to understand their requirement and suggest them the best available solutions. Their queries are mentioned as (i) to (v) below.<br>I. Which will be the most appropriate block, where TTC should plan to install their server?<br>II. Draw a block-to-block cable layout to connect all the buildings in the most appropriate manner for efficient communication.<br>III. Which of the following device will be suggested by you to connect each computer in each of the buildings?<br>(a) Switch<br>(b) Modem<br>(c) Gateway<br>IV. The company is planning to connect its Mumbai head office to its Bhopal branch office, which are more than 1000 km apart. Which type of network will be formed?<br>V. When a signal is transmitted through a wire from Human Resource to Conference Block, its strength reduces. Which device would you suggest the company use to solve this problem? | |
| 36 | Consider the DataFrame **df** shown below.<br>\| \| ID \| Product \| Category \| Price \|<br>\| 0 \| 201 \| Pen \| Stationery \| 10 \|<br>\| 1 \| 202 \| Notebook \| Stationery \| 40 \|<br>\| 2 \| 203 \| Eraser \| Stationery \| 8 \|<br>\| 3 \| 204 \| Water Bottle \| Utility \| 120 \|<br>\| 4 \| 205 \| Lunch Box \| Utility \| 220 \|<br>I. Print rows with index 1 and 2.<br>II. Add a column **"Stock"** with values [100, 150, 200, 120, 110] .<br>III. Delete column **"Category".**<br>IV. Change column name **"Price"** to **"Cost".**<br>V. Show only **"Product"** and **"Cost"** columns. | 5 |
| 37(A) | Write suitable SQL query for the following:<br>I. To display the names of all students in uppercase from the **name** column of the **Student** table.<br>II. To extract the first three characters from the **ename** column in the **Employee** table.<br>III. To display the name and the position of letter 'a' in the **name** column from the **Student** table.<br>IV. To round the salaries to the nearest 100 from the **Salary** column of **Employee** table.<br>V. To display the current date and time.<br>**OR** | 5 |
| (B) | Write suitable SQL query for the following:<br>I. To find Average Marks from the **AggMarks** column of the **Student** table.<br>II. To count stream without duplicate from **Stream** column of **Student** table.<br>III. To display the maximum price in the **Price** column of the **Supplier** table.<br>IV. To display the details of furniture which are purchased in the month of December from **Date_of_purchase** column of the **Furniture** table.<br>V. To Display the sum of salaries from the **Salary column** of the **Employee** table. | |