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FOR CBSE CLASS 12 PREPARATION

CBSE Class 12 Sample Paper 2027 for Informatics Practices

EXAM	YEAR	TYPE	SUBJECT
CBSE Class 12	2027	Sample Paper	Informatics Practices

INFORMATICS PRACTICES (Code No. 065)
SAMPLE QUESTION PAPER (THEORY)
Class - XII (2026-27)

Time Allowed: 3 Hours **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.

QNO	Section-A (1 to 21) 21 x 1 = 21 Marks	MARKS
1	A Pandas Series S1 is created with index labels ['a', 'b', 'c', 'd', 'e']. State whether the following statement is True or False: "The statement S1['b':'d'] will produce the same result as S1[1:3]."	1
2	Ravi needs to find the total number of characters in the StudentName column. Which SQL function should he use? A. COUNT() B. SIZE() C. LENGTH() D. TOTAL()	1
3	Which type of Intellectual Property Right (IPR) protects an invention by giving the creator exclusive rights to make, use, and sell it for a specific period? A. Copyright B. Trademark C. Patent D. Software License	1
4	While plotting a graph using Matplotlib, which function is used to specify the label for the Y-axis? A. label_y() B. ylabel() C. yaxis_name() D. set_y()	1
5	I am a networking device that converts digital data from a computer into analog signals for transmission, and then converts incoming analog signals back into digital data for the computer to understand. Who am I?	1

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	A. Repeater B. Router C. Modem D. Switch	
6	Which of the following is a Data Manipulation Language (DML) command in SQL? A. ALTER B. DROP C. UPDATE D. CREATE	**1**
7	The process of re-selling old electronic goods after minor repairs or modification is called: A. Recycling B. Refurbishing C. Reducing D. Leaching	**1**
8	What will be the output of the following code? import pandas as pd print(pd.Series(5, index=[0, 1, 2])) A. A Series with values 5, 5, 5 B. A Series with value 5 only at index 0 C. A Series with values 0, 1, 2 D. Error	**1**
9	Fill in the blank: The SQL clause used to filter the groups formed by the GROUP BY clause based on a specific condition is _____.	**1**
10	Riya visited an online shopping website, and it saved small text files on her computer to remember her preferences and session details. What are these files called? A. Plug-ins B. Add-ons C. Cookies D. Scripts	**1**
11	Which keyword is used with the ORDER BY clause to sort data in descending order? A. DESC B. DOWN C. DSC D. REVERSE	**1**
12	If we add two Pandas Series that do not have matching index labels, the result for those non-matching indices will be: A. 0 B. Error C. NaN D. Empty string	**1**
13	The process of buying electronic gadgets only when necessary to minimize the generation of electronic waste is an example of which 'R' of e-waste management? A. Recycle	**1**

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	B. Reuse C. Reduce D. Refurbish	
14	Which SQL function is used to extract a specific number of characters from a string starting from a given position? A. LEFT() B. RIGHT() C. LENGTH() D. MID()	**1**
15	Aman is exporting a Pandas DataFrame to a CSV file using the to_csv() function. He wants to save only the data and avoid writing the row indices to the file. Which parameter should he set to False to prevent the indices from being included? A. header B. sep C. index D. columns	**1**
16	Fill in the blank: The process of storing a website on a web server so that it can be accessed over the internet is known as _____.	**1**
17	A HR manager queries an employee database. He wants to retrieve only those records where the Commission field actually contains a value. Which SQL condition should he use? A. WHERE Commission != NULL B. WHERE Commission IS NOT NULL C. WHERE Commission <> NULL D. WHERE Commission NOT NULL	**1**
18	When creating a DataFrame from a list of dictionaries, the dictionary keys become: A. Row indices B. Data values C. Column labels D. Positional Index	**1**
19	State whether the following statement is True or False: In SQL, the BETWEEN operator is inclusive of both the lower and upper values specified in the range.	**1**
	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 for Assertion (A). B. Both Assertion (A) and Reason (R) are True and Reason (R) is not the correct explanation for Assertion (A). C. Assertion (A) is True and Reason (R) is False. D. Assertion (A) is False, but Reason (R) is True.	
20	**Assertion (A)** The statement df.drop('Science', axis=0) will remove the column labeled 'Science' from the DataFrame. **Reason (R)** In Pandas drop() method, axis=0 refers to row-wise operations and axis=1 refers to column-wise operations.	**1**
21	**Assertion (A)** In SQL, the query select * from emp; and SELECT * FROM EMP; will produce the same result. **Reason (R)** SQL is a case-sensitive language.	**1**
	Section-B (22 to 28) 7X2 = 14 Marks	

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22	**(A)** (i) Explain the use of the head() function in a Pandas DataFrame. (ii) What happens if the parameter n is not specified in the head() function? **OR** **(B)** Explain the concept of Boolean Indexing in DataFrames. Write a small Python code example to demonstrate it.	**2**
23	Differentiate between an Active and a Passive digital footprint.	**2**
24	Define Data Visualization and state its primary purpose.	**2**
25	**(A)** Define Star Topology. Mention one major advantage of using it. **OR** **(B)** What is VoIP? State any one advantages of using VoIP for communication.	**2**
26	Write SQL queries for the following requirements: (i) Display the last 3 characters of the attribute Ename from the EMPLOYEE table. (ii) Find the position of the substring 'ma' in the string 'Informatics'.	**2**
27	Mention and briefly explain any two guidelines of netiquette.	**2**
28	**(A)** Consider the following two dictionaries: dict1 = {'a': 10, 'b': 20} dict2 = {'a': 5, 'b': 10, 'c': 20} Write Python code to create a DataFrame from a list containing the above two dictionaries. **OR** **(B)** Mention the purpose of read_csv() and explain the use of its sep parameter.	**2**
	Section-C (29 to 32) 4X3 = 12 Marks	
29	Consider the following digital security scenarios and answer the questions: (i) Mehak receives an SMS from an unknown number stating she has won a lottery. To claim it, she must click a link and enter her Aadhaar number and bank OTP. What type of cybercrime is this? (ii) A group of people repeatedly post insulting comments and spread rumors about a classmate on a social media platform to distress them. What is this activity called? (iii) Suggest one Communication Etiquette that should be followed to maintain credibility while participating in an online discussion forum.	**3**
30	**(A)** (i) Write a Python program to create a Pandas Series named Inventory from the following dictionary: stock = {'Pens': 150, 'Erasers': 80, 'Sharpeners': 60, 'Notebooks': 200}. (ii) Consider two Series S1 and S2: import pandas as pd S1 = pd.Series([10, 20], index=['a', 'b']) S2 = pd.Series([30, 40], index=['b', 'c']) Write the output of the statement: print(S1 + S2) **OR**	**3**
	(B) Consider a DataFrame df as shown below: Name IP Maths	

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	0 Arpit 95 88 1 Vani 89 92 2 Chetan 78 80 Write Pandas statements to perform the following actions: (i) Add a new column 'Total' containing the values [183, 181, 158]. (ii) Rename the 'Name' column to 'Student'. (iii) Delete the 'Maths' column from the DataFrame.	
31	Consider the table HOSPITAL, which contains the following columns: Column Name – Remark PNo – Patient Number PName – Patient Name Dept – Department DOA – Date of Admission Table: HOSPITAL PNo | PName | Dept | DOA 101 | Ravi Kumar | Cardiology | 2024-05-12 102 | Anita Sharma | Neurology | 2025-06-01 103 | Mohan Das | Cardiology | 2023-05-18 104 | Seema Verma | Orthopedics | 2022-04-22 105 | Rahul Singh | Cardiology | 2025-03-30 Write SQL queries to perform the following tasks: (i) Display the names of all patients in the Cardiology department in lowercase. (ii) Display each patient's number along with the day name of the week on which they were admitted. (iii) Display the patient names arranged in alphabetical order.	**3**
32	**(A)** Consider a table named STUDENT containing the following data: ID | Name | DOB 1 | Aman | 2005-08-15 2 | Vinod | 2006-01-26 3 | Saurabh | 2004-01-01 Write the output of the following SQL queries: (i) SELECT UPPER(Name), LENGTH(Name) FROM STUDENT WHERE ID = 2; (ii) SELECT DAY(DOB), YEAR(DOB) FROM STUDENT WHERE ID = 3; (iii) SELECT RIGHT(Name, 3) FROM STUDENT WHERE ID = 1; **OR** **(B)** Write the output of the following SQL queries: (i) SELECT POWER(MOD(13, 5), 2); (ii) SELECT UCASE(MID("Digital India", 9, 5)); (iii) SELECT LENGTH(TRIM(" Informatics ")); **Section-D (33 to 34) 2X4 = 8 Marks**	**3** **MARKS**
33	Write a Python program using Matplotlib to plot a Line Graph showing the "Monthly Sales" of a shop with the following data: Months: ['Jan', 'Feb', 'Mar', 'Apr'] Sales: [12000, 15000, 11000, 18000] The program should include: • Code to import the required library.	**4**

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- Code to plot the line graph with a label "Sales".
- A title "Sales Performance".
- Labels for both X-axis ("Month") and Y-axis ("Amount").
- Code to display the legend and show the plot.

34 **(A)** Consider the following tables: **4**

Table: SPORTS

RegNo	SName	Game	Fees
101	Aryan	Cricket	500
102	Riya	Tennis	600
103	Kabir	Cricket	500
104	Ishaan	Tennis	600
105	Tejas	Football	750

Table: COACH

CoachID	CName	Game
C1	Venkatesh	Cricket
C2	Rameshwar	Tennis
C3	Sridhar	Football

Write SQL queries for the following:
(i) Display the Game name and the total fees collected for each game, but only for those games where the total fees exceed 1000.
(ii) Display the Student Name (SName) and their respective Coach Name (CName).

OR

(B) Consider the following tables:

Table: Employee

EmpID	Name	DeptID	Salary
301	Aarav	D1	5200
302	Riya	D2	7500
303	Kabir	D2	6800
304	Ananya	D3	4000
305	Ishaan	D1	4900

Table: Department

DeptID	DeptName
D1	HR
D2	IT
D3	Sales

Write the output of the following SQL queries:

(i) SELECT DeptID, COUNT(*), MAX(Salary) FROM Employee GROUP BY DeptID HAVING COUNT(*) > 1 ORDER BY DeptID;
(ii) SELECT Name, DeptName FROM Employee, Department WHERE Employee.DeptID = Department.DeptID AND Employee.Salary > 6000;

Section-E (35 to 37) 3X5 = 15 Marks

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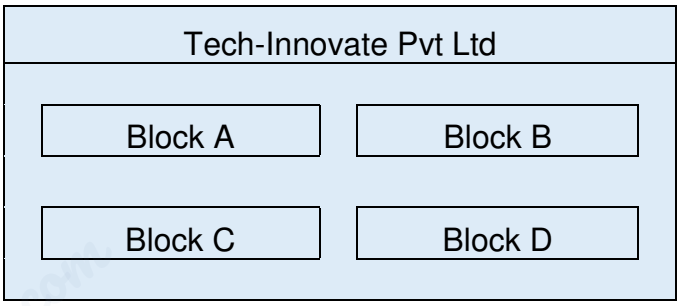
35 — **5**

Tech-Innovate Pvt Ltd is a leading technology solutions provider renowned for delivering innovative digital services to clients worldwide. The company operates from a spacious campus comprising four blocks: Block A, Block B, Block C, and Block D.



To ensure smooth communication, centralized data storage, and high-speed connectivity across the campus, the organization plans to set up a structured network connecting all blocks.

The following tables provide the distances between the blocks and the number of computers in each block.

From	To	Distance (meters)
Block A	Block B	40 m
Block A	Block C	50 m
Block A	Block D	160 m
Block B	Block C	70 m
Block B	Block D	60 m
Block C	Block D	120 m

Block	Number of Computers
Block A	25
Block B	60
Block C	15
Block D	150

As a network engineer, answer the following questions based on the details given above:

(i) Suggest the most suitable block to install the server. Justify your answer.

(ii) What type of network (PAN, LAN, MAN, or WAN) will be formed within the campus?

(iii) Suggest the placement of a Switch with suitable justification.

(iv) The company wants to host a website where clients can log in and see real-time project updates. Should they develop a Static or a Dynamic website? Why?

(v) Identify between which blocks a repeater is needed and justify your answer.

36 — **3+1+1 = 5**

(i) Create a DataFrame named StoreDF as shown below using dictionary of series:

	Items	Quantity	Unit_Price
0	Bread	50	30
1	Milk	100	25
2	Eggs	120	6

Write suitable Pandas statements to Perform the following operations:

(ii) Add a new row containing data [Butter, 40, 55]

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(iii) Display values of Items column only,

37 **(A)** Refer to the table given below: **5**

Table: BOOK

BookID	Title	Author	Price
201	Wings of Fire	A P J Abdul Kalam	350
202	The Guide	R. K. Narayan	299
203	The God of Small Things	Arundhati Roy	399
204	Malgudi Days	R. K. Narayan	280

Write SQL commands for the following tasks:
(i) Insert a new record into the table with the values: 205, The White Tiger, Aravind Adiga, 350.
(ii) Update the Price of the book with BookID 202 to 325.
(iii) Delete the records of all books written by 'R. K. Narayan'.
(iv) Add a new column Publisher of type VARCHAR(30) to the table.
(v) Drop the table BOOK from the database.

OR

(B) Consider a table named PRODUCT, which contains the following columns: PCode, PName, Category, Qty, Price, ExpiryDate.
The columns are described as follows:
PCode – A unique code assigned to each product.
PName – The name of the product.
Category – The category or type of the product.
Qty – The available quantity of the product.
Price – The unit price of the product.
ExpiryDate – The expiration date of the product.

Write SQL queries for:
(i) Display PName and its Price rounded to one decimal place.
(ii) Display the names of products that end with the letter 's'.
(iii) Display the PName and Category of those products whose Price is less than or equal to 500.
(iv) Display the total quantity of all products.
(v) Display PName after removing leading spaces only.

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