

**ARMY PUBLIC SCHOOL JORHAT**



**HOLIDAY PROJECT / ACTIVITIES**  
**CLASS – XII SCIENCE**

## SUBJECT: INFORMATION PRACTICES

### General Instruction:

#### i. Solve all MYSQL base questions.

**Q1.** Predict the output of the following query: `SELECT MOD (9,0);`

- a)0      b)Null      c)NaN      d)9

**Q2.** Which of the following SQL functions does not belong to the Math functions category?

- a. POWER()   b. ROUND()   c. LENGTH()   d. MOD()

**Q3.** Predict the output of the following query:

`SELECT LCASE (MONTHNAME ('2023-03-05'));`

- a.. May      b. March      c. may      d. march

**Q4.** With reference to SQL, identify the invalid data type.

- a. Date      b. Integer      c. Year      d. Month

**Q5.** Raj, a Database Administrator, needs to display the average pay of workers from those departments which have more than five employees. He is experiencing a problem while running the following query:

`SELECT DEPT, AVG(SAL) FROM EMP WHERE COUNT(*) > 5 GROUP BY DEPT;`

Which of the following is a correct query to perform the given task?

- a) `SELECT DEPT, AVG(SAL) FROM EMP WHERE COUNT(*) > 5 GROUP BY DEPT;`
- b) `SELECT DEPT, AVG(SAL) FROM EMP HAVING COUNT(*) > 5 GROUP BY DEPT;`
- c) `SELECT DEPT, AVG(SAL) FROM EMP GROUP BY DEPT WHERE COUNT(*) > 5;`
- d) `SELECT DEPT, AVG(SAL) FROM EMP GROUP BY DEPT HAVING COUNT(*) > 5;`

**Q6.** Consider the given SQL string: “12#All the Best!” Write suitable SQL queries for the following:

i. Returns the position of the first occurrence of the substring “the” in the given string.

ii. To extract last five characters from the string.

**Q7.** What are aggregate functions in SQL? Name any two.

**Q8.** What is the purpose of the following clauses in a select statement?

`SELECT * FROM T1 WHERE PID=2001 AND VIS="VP1";`

**Q9.** Define equi-join . What is non-equi join?

**Q10.** Based on the SQL table CAR\_SALES, write suitable queries for the following:

Number	Segment	Fuel	Qt1	Qt2
1	COMPACT HATCHPACK	PETROL	56000	70000
2	COMPACT HATCHPACK	DIESEL	34000	40000
3	MUV	PETROL	33000	35000
4	MUV	DIESEL	14000	15000
5	SUV	PETROL	27000	54000
6	SUV	DIESEL	18000	30000
7	SEDAN	PETROL	8000	10000
8	SEDAN	DIESEL	1000	5000

Display fuel wise average sales in the first quarter.

Display segment wise highest sales in the second quarter.

Display the records in the descending order of sales in the second quarter.

**Q11.** Write MySQL statements for the following:

i. To create a database named FOOD.

ii. To create a table named Nutrients based on the following specification:

Column_Name	Data Type	Constraints
Food_Item	Varchar(20)	Primary Key
Calorie	Integer	

**Q12.** Write the output produced by the following SQL commands:

```
SELECT MID("Informatics",3,4), SUBSTR("Practices",3);
SELECT LEFT("INDIA",3), RIGHT("Computer Science",4);
SELECT LENGTH("Informatics Practices");
```

**Q13.** Preeti manages database in a block chain start-up. For business purposes, she created a table named BLOCKCHAIN. Assist her by writing the following queries:

Id	User	Value	Hash	Transaction_date
1	STEVE	900	ERTU	2020-09-19
2	MEESHA	145	@345r	2021-03-23
3	NIMISHA	567	#wert5	2020-05-06
6	PIHU	678	%rtyu	2022-07-13
5	KOPAL	768	rrt4%	2021-05-15
7	PALAKSHI	534	wer@3	2022-11-29

Write a query to display the year of oldest transaction.

Write a query to display the month of most recent transaction.  
 Write a query to display all the transactions done in the month of May.  
 Write a query to count total number of transactions in the year 2022.

**Q14.** Write suitable SQL queries for the following:

To display current date and time.

To round off the value -34.4567 to 2 decimal place.

To remove all the probable leading and trailing spaces from the column userid of the table named user.

To display the length of the string 'FIFA World Cup'.

**Q15.** Elon has created following table named exam:

Reg No	Name	Subject	Marks
1	SANYA	COMPUTER SCIENCE	98
2	SANCHAY	IP	100
3	VINESH	CS	90
4	SNEHA	IP	99
5	AKSHITA	IP	100

Help him in writing SQL queries to perform the following task:

- Insert a new record in the table having following values: [6,'Khushi','CS',85]
- To change the value "IP" to "Informatics Practices" in subject column.
- To remove the records of those students whose marks are less than 30.
- To add a new column Grade of suitable datatype.
- To display records of "Informatics Practices" subject.

**Q16.** Consider the following table named "Product", showing details of products being sold in a grocery shop.

Pcode	Pname	Uprice	Manufacturer
P01	Washing Powder	120	Surf
P02	Tooth Paste	54	Colgate
P03	Soap	25	Lux
P04	Tooth Paste	65	Pepsodent
P05	Soap	98	Dove
P06	Shampoo	245	Dove

Write the output(s) produced by executing the following queries on the basis of the information given above in the table Product:

SELECT PName, Average(UPrice) FROM Product GROUP BY Pname;

SELECT DISTINCT Manufacturer FROM Product;

SELECT COUNT(DISTINCT PName) FROM Notes Product;

SELECT PName, MAX(UPrice), MIN(UPrice) FROM Product GROUP BY PName;

**Q17.** Write SQL query for the following:

Add a new column Discount to the table Product.

Calculate the value of the discount in the table Product as 10 per cent of the UPrice for all those products where the UPrice is more than 100, otherwise the discount will be 0.

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# SUBJECT: CHEMISTRY

## INVESTIGATORY PROJECT

Scientific investigations involving laboratory testing and collecting information from other sources

Prepare a soft copy (Power Point Presentation / MS WORD file) for AISSCE Chemistry Practical Examination 2024-25

A few suggested projects:

<u>TOPICS</u>	<u>ROLL NO.</u>
<ul style="list-style-type: none"><li>• Study of the presence of oxalate ions in guava fruit at different stages of ripening.</li></ul>	<b>1</b>
<ul style="list-style-type: none"><li>• Study of quantity of casein present in different samples of milk.</li></ul>	<b>2</b>
<ul style="list-style-type: none"><li>• Preparation of soybean milk and its comparison with the natural milk with respect to curd formation, effect of temperature, etc.</li></ul>	<b>3</b>
<ul style="list-style-type: none"><li>• Study of the effect of Potassium Bisulphate as food preservative under various conditions (temperature, concentration, time, etc.)</li></ul>	<b>4</b>
<ul style="list-style-type: none"><li>• Study of digestion of starch by salivary amylase and effect of pH and temperature on it.</li></ul>	<b>5</b>
<ul style="list-style-type: none"><li>• Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice, etc.</li></ul>	<b>6</b>
<ul style="list-style-type: none"><li>• Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).</li></ul>	<b>7</b>
<ul style="list-style-type: none"><li>• Study of common food adulterants in fat, oil and butter.</li></ul>	<b>8</b>
<ul style="list-style-type: none"><li>• Study the presence of adulterants in Sugar</li></ul>	<b>9</b>
<ul style="list-style-type: none"><li>• Study the presence of adulterants in turmeric power, chilli powder and pepper.</li></ul>	<b>10</b>
<ul style="list-style-type: none"><li>• Study of Content of cold drink available in the market.</li></ul>	<b>11</b>
<ul style="list-style-type: none"><li>• Determination of caffeine in different tea samples.</li></ul>	<b>12</b>
<ul style="list-style-type: none"><li>• Drug addiction and abuse.</li></ul>	<b>13</b>
<ul style="list-style-type: none"><li>• Study the presence of insecticides, pesticides (nitrogen containing) in various fruits &amp; vegetables.</li></ul>	<b>14,18</b>
<ul style="list-style-type: none"><li>• Study of different composition of beehive products.</li></ul>	<b>15</b>
<ul style="list-style-type: none"><li>• Antioxidant activity.</li></ul>	<b>16</b>
<ul style="list-style-type: none"><li>• Comparative study of commercial antacids.</li></ul>	<b>17</b>

**Note:** Any other investigatory project, which involves about 10 periods of work, can be chosen with the approval of the teacher.

## **SUBJECT: PHYSICS**

1. Make an investigatory project on (any one)

(a) To study various factors on which the internal resistance/ EMF of cell depends.

(b) To study the variations in current flowing in a circuit containing an LDR because of a variation in the power of the incandescent lamp, used to 'illuminate' the LDR(keeping all the lamps at a fixed distance).

(c) To study the variations in current flowing in a circuit containing an LDR because of the variation in the distance of a incandescent lamp(of fixed power) used to 'illuminate' the LDR.

(d)To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror,an equiconvex lens (made from a glass of known refractive index)and an adjustable object needle.

(e)To investigate the relation between the ratio of (i) output and input voltage and (ii)number of turns in the secondary coil and primary coil of a self-designed transformer.

(f) To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.

(g) To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.

(h) To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.

(i) To study the earth's magnetic field using a compass needle-bar magnet by plotting magnetic field lines and tangent galvanometer.



## **SUBJECT: BIOLOGY**

1. Prepare a presentation along with assigned team buddy on (a) molecular basis of inheritance & biomolecules (b) microbes in welfare (c) application of biotechnology (d) biodiversity & conservation.
2. Make an investigatory research project , as per class roll number on
  - (a) chromosomal disorder in man along with sex determination in honeybee
  - (b) isolation of genomic DNA from mulberry leaf
  - (c) study plant population density
  - (d) study soil of atleast two sites with reference to texture, moisture content, water holding capacity, pH and corelate with flora and fauna of the site
  - (e) study plant population frequency
  - (f) lifecycle of banana pseudostem weevil & its impact on banana production
  - (g) agarose gel electrophoresis of rice genome
  - (h) isolate DNA from spinach or papaya.

## **SUBJECT: PHYSICAL EDUCATION**

### **I. Tick the correct option**

1. National Sports Day is celebrated on  
a. 9th August    b. 19th August    c. 28th August    d. 29th August
2. Which of the races is run "to promote brotherhood"?  
a. Run for Fun                      b. Run for specific cause  
c. Run for Unity                      d. Health Run

### **II. Answer the following questions briefly.**

1. Write briefly about any two types of Run.
2. Write about the objectives of Intramural tournaments.
3. What is the significance of Extramural Tournaments.

### **III. Answer the following questions in 150-200 words.**

1. How would you plan for an Intramural Tournament? Highlight any two problems you may encounter. How will you deal with them?
2. Discuss a method you would choose to spread health awareness and harmony in your area. Support your answer with reasons.
3. Write down the difference between Intramural and Extramural Tournaments.

## SUBJECT: MATHEMATICS

1. Let  $A$  be the set of all human beings in a town at a particular time. Determine whether each of the following relations are reflexive, symmetric and transitive:

(i)  $R = \{(x,y) : x \text{ and } y \text{ work at the same place } \}$

(ii)  $R = \{(x, y) : x \text{ and } y \text{ live in the same locality} \}$

(iii)  $R = \{(x, y) : x \text{ is wife of } y \}$

(iv)  $R = \{(x,y) : x \text{ is father of } y \}$

2. Test whether the following relations  $R_1$ ,  $R_2$ , and  $R_3$  are (i) reflexive (ii) symmetric and (iii) transitive:

(i)  $R_1$  on  $Q_0$  defined by  $(a,b) \in R_1 \Leftrightarrow a = 1/b$ .

(ii)  $R_2$  on  $Z$  defined by  $(a, b) \in R_2 \Leftrightarrow |a - b| \leq 5$

(iii)  $R_3$  on  $R$  defined by  $(a, b) \in R_3 \& a^2 - 4ab + 3b^2 = 0$ .

3. Give an example of a relation which is

(i) reflexive and symmetric but not transitive;

(ii) reflexive and transitive but not symmetric;

(iii) symmetric and transitive but not reflexive;

(iv) symmetric but neither reflexive nor transitive.

(v) transitive but neither reflexive nor symmetric.

4. Prove that the relation  $R$  on  $Z$  defined by  $(a, b) \in R \Leftrightarrow a - b$  is divisible by 5 is an equivalence relation on  $Z$ .

5. Let  $S$  be a relation on the set  $R$  of all real numbers defined by  $S = \{(a,b) \in R \times R : a^2 + b^2 = 1\}$  Prove that  $S$  is not an equivalence relation on  $R$ .

6. If R and S are relations on a set A, then prove that

(i) R and S are symmetric  $\Rightarrow R \cap S$  and  $R \cup S$  are symmetric

(ii) R is reflexive and S is any relation  $\Rightarrow R \cup S$  is reflexive.

7. Order  $3 \times 3$  find  $|A^{-1}| = ?$

8. Order  $3 \times 3$  ;  $|A| = 3$  and  $|2AB| = 120$  find  $|B'| = ?$

9. If  $n = 3 \times 3$  find  $|\text{Adj}(\text{Adj } A)|$  and  $|A| = 5$

10. Find the value of x if the area of  $\Delta$  is 35 square units with vertices (x, 4), (2, -6) and (5, 4)

11. An amount of Rs 5000 is put in to three investments at the rate of interest of 6%, 7% and 8 % per annum. The total annual income is Rs 358. If the combined income from the first two investments is Rs 70 more than the income from the third, find the amount of each investment by matrix method.

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13. a) Find area of  $\Delta ABC$  whose vertices are A(3, 8), B(-4, 2), C(5, -1).

(b) Find equation of line joining A(3, 5) & B(4, 2) using determinants.

(c) Find value of  $\lambda$  so that points (1, -5), (-4, 7) and ( $\lambda$ , 7) are collinear.

14. Solve the equations using matrix method

$$x + 2y + z = 7 ;$$

$$x + 3z = 11 ;$$

$$2x - 3y = 1$$

## **SUBJECT: ENGLISH**

### **1. What's in a name?**

Do a research work on the names of both the English books— Flamingo & Vistas. Find out the relevance of naming these books with reference to your class. Write down this research in your English Notebook.

**2. "Good words are worth much, and cost little." -George Herbert**  
With reference to the chapter, The Last Lesson, write a speech on :  
"Tomorrow never comes".

**3. Make a scrap book of various types of invitation for social and formal gatherings.**