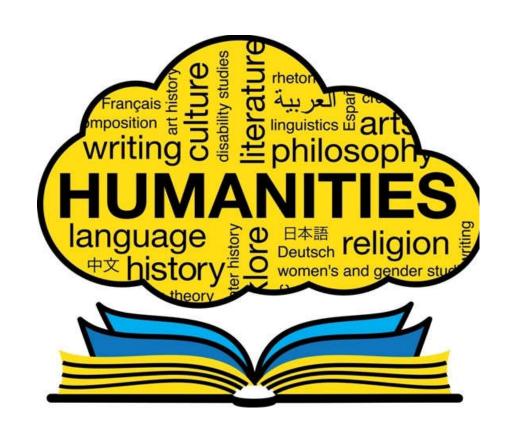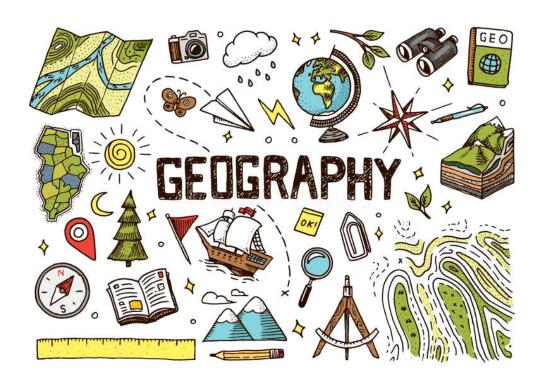# SHRI JAIN PUBLIC SCHOOL, BIKANER

CLASS - XII

HOLIDAY HOMEWORK 2023-24

GEOGRAPHY

1. **Human Geography**

2. **The World Population Density Distribution and Growth**

3. **Human Development**

Map work (Based on identification of features on World Political Map)

POLITICAL SCIENCE

Q1. "The European Union is more a nation state than an Union."

Q2. "Asean was and still remains principally an economic association."Justify.

Q3. How did the relations between India and China improve after the 1962 Conflict?

Q4. How did China end its political and economic isolation? Examine the steps towards setting up market economy in China.

OR

How did China rise to be an economic superpower? Assess.

Q5 Write a short note on BRICS and QUAD?

Q6. Give a brief account of India's relations with China?

Q7. Locate the Asean member-old and new members on the world political map

Q8. Locate two old members of EU and two new members of EU in the world political map

Q9. Locate SAARC members in the political world map

HISTORY

Make Project File (Only for Summer Vacation Holiday Homework) to know:-

1. Harappan Civilization (Page Limit-3 pages)
2. Period of Mahajanpadas (Page Limit- 3 pages)
3. The Great Epic- Mahabharata (Page Limit- 3 pages)
4. Travellers who came to India (Page Limit- 3 pages)
5. Hero's of 1857 Revolution (Page Limit- 3 pages)
6. History of Bikaner, Jaipur and Chittorgarh (Page Limit- 9-10 pages)

Instructions for the History Holiday Homework

- *Project to be done individually and should be handwritten.*
- *Make use of primary sources available on internet which include Primary sources like newspapers cuttings, photographs and film footages.*
- *Assessment will be based on creativity, presentation and research work conducted by the student.*

ECONOMICS

Q.1   From the following data, calculate national income.

S.No	Items	Rs. In Cr.
1	Profit	1500
2	Rent	1300
3	Nit	350
4	Mixed income of self employed	600
5	Compensation of employees	3000
6	Reimbursement to employees for medical expenses for medical expenses	300
7	Depreciation	200
8	Excess of factor income to Rest of the world over facto income from rest of the world	50
9	Excess of imports over exports	40
10	Interest	1100

Q.2   Given the following data and using income method calculate.
       (a) Net domestic income
       (b) Gross domestic income
       (c) Net national in income
       (d) Net national product at market price

S.No	Items	Rs. In Cr.
1	Indirect taxes	9000
2	Subsidies	1800
3	Depreciation	1700
4	Mixed income for self employed	28000
5	Operating surplus	10,000
6	NFIA	-300
7	Compensation of employees	24000

Q.3   Calculate GDP_{mp} and GNP_{FC} from following data.

S.No	Items	Rs. In Cr.
1	Operating surplus	700 cr.
2	Profit	100 cr.
3	Wages & salaries (cash)	1000 cr.
4	Interest	200 cr.
5	Consumption of fixed capital	50 cr.
6	NFIA	-10 cr.
7	Value of benefits in kind provided to employees	200 cr.
8	Goods & service tax	150 cr.
9	Subsidies	10 cr.

Q.4   Calculate GNPmp

S.No	Items	Rs. In Cr.
1	Mixed income of self employed	800 cr.
2	Consumption of fixed capital	50 cr.
3	Wages & salaries	700 cr.
4	Compensation of employees from abroad	20 cr.
5	Rent on land	200 cr.
6	Royalty of sub soil assets	30 cr.
7	Interest paid by production units	150 cr.
8	Interest paid by consumers	100 cr.
9	Profit	300 cr.
10	Social security contribution by employers	100 cr.
11	Property and entrepreneurial income from abroad	-20 cr.
12	Net indirect taxes	200 cr.

Q.5   Calculate GNP$_{mp}$

S.No	Items	Rs. In Cr.
1	Compensation of employees	2500 cr.
2	Profit	700 cr.
3	Mixed income of self employed	7,500 cr.
4	Govt. final consumption expenditure	3000 cr.
5	Rent	400 cr.
6	Interest	350 cr.
7	NFIA	50 cr.
8	Net current transfer to abroad	100 cr.
9	NIT	150 cr.
10	Depreciation	70 cr.
11	Net export	40 cr.

Q.6   Calculate NNP$_{mp}$

S.No	Items	Rs. In Cr.
1	Transfer payments by government	7 cr.
2	Govt. final consumption expenditure	50 cr.
3	Net imports	-10 cr.
4	Net domestic fixed capital formation	60 cr.
5	Private final consumption expenditure	300 cr.
6	Net factor Income to abroad	-5 cr.
7	Closing stock	8 cr.
8	Opening stock	8 cr.
9	Depreciation	12 cr.
10	Corporation tax	60 cr.
11	Retained earning of corporations	20 cr

Q.7   Find NDPFC from the following Data.

S.No	Items	Rs. In Cr.
1	Gross domestic fixed investment	10,000 cr.
2	Inventory investment	5000 cr.
3	Depreciation	2000 cr.
4	Indirect tax	1000 cr.
5	Subsidies	2000 cr.
6	Consumption expenditure	20,000 cr.
7	Residential construction investment	6000 cr.

Q.8   From the following data, calculate GDP at both (A) market price, and (b) factor cost

S.No	Items	Rs. In Cr.
1	Gross investment	90 cr.
2	Net exports	10 cr.
3	NIT	5 cr.
4	Depreciation	15 cr.
5	NFIA	-5 cr.
6	Private consumption expenditure	350 cr.
7	Govt. purchase of goods & services	100 cr.

Q.9   A farmer purchase Rs.1000 worth of seeds, Rs.2000 worth of fertilizers, and pays 1500 as water charges to raise a wheat crop. He produces 50 quintals of wheat and sell the same at Rs.200 per quintal. Calculate value added by farmer.

Q.10   Find net value added at market price.

S.No	Items	Rs. In Cr.
1	Fixed capital good with a life span of 5 years	16 lakh
2	Raw materials	6 lakh
3	Sales	25 lakh
4	Net change in stock	-(2) lakh
5	Taxes on production	1 lakh

Q.11   Given the following data, find the Net value added at factor cost by farmer producing wheat.

S.No	Items	Rs. In Cr.
1	Sales of wheat by the farmer in the local market	6,80,000 cr.
2	Purchase of a tranctor	5,00,000 cr.
3	Procurement of wheat by the govt form the farmer	20,000 cr.
4	Consumption of wheat by the farming family during the year	5,000 cr.
5	Subsidy	2,000 cr.
6	Expenditure on the maintenance of existing capital stock	10,000 cr.

Q.12 Calculate GVAmp from the following :

S.No	Items	Rs. In Cr.
1	Purchase by firm A from firm B	100 cr.
2	Purchase by firm B from firm A	150 cr.
3	Sales by firm A	200 cr.
4	Sales by firm B	300 cr.
5	Exports by firm B	30 cr.
6	Change in stock of firm A	-20 cr.
7	Change in stock of firm B	10 cr.

Q.13 Calculate national income from following data.

S.No	Items	Rs. In Cr.
1	Purchase of materials etc by firm A from firm B	20 cr.
2	Purchase of materials etc by firm B from firm A	30 cr.
3	Value of output produced by firm A	100 cr.
4	Value of output produced by firm B	80 cr.
5	Payment of indirect tax by firm A	10 cr.
6	Payment of indirect tax by firm B	5 cr.
7	Consumption of fixed capital by firm B	5 cr.
8	Consumption of fixed capital by firm A	10 cr.
9	Net change in stock of firm A	(-) 7 cr.
10	Net change in stock of firm B	7 cr.
11	NFIA	(-) 5 cr.

Q.14 Calculate compensation of employees from the following data

S.No	Items	Rs. In Cr.
1	Profit after tax	20 cr.
2	Interest	45 cr.
3	Gross domestic product at market price	200 cr.
4	Goods & service tax	10 cr.
5	Consumption of fixed capital	50 cr.
6	Rent	25 cr.
7	Corporate tax	5 cr.

Q.15 From the following data, calculate (A) GDPFC (B) factor income to abroad.

S.No	Items	Rs. In Cr.
1	Compensation to employees	1000 cr.
2	Profits	200 cr.
3	Dividends	80 cr.
4	Gross national product at market price	1800 cr.
5	Rent	250 cr.
6	Interest	200 cr.
7	Gross domestic capital formation	300 cr.
8	Net fixed capital formation	200 cr.
9	Change in stock	50 cr.
10	Factor income from abroad	80 cr.
11	Net indirect taxes	120 cr.

Q.16 Calculate "Depreciation on capital assets from the following data"

S.No	Items	Rs. In Cr.
1	Capital value of the assets	1000 cr.
2	Estimated life of the assets	20 yr.
3	5 crap value	NIL

HINDI

1. निम्नलिखित विषयों पर रचनात्मक लेख लिखिए।

   ➢ अध्ययन का आनंद

   ➢ आधुनिकता और नारी

2. निम्नलिखित विषयों पर औपचारिक पत्र लिखिए।

   ➢ अपने क्षेत्र में पेड़–पौधों के अनियंत्रित कटाव को रोकने के लिए अपने जिलाधिकारी को एक प्रार्थना–पत्र लिखिए।

   ➢ अपने मोहल्ले में वर्षा के कारण उत्पन्न हुई जल–भराव की समस्या की ओर ध्यान आकृष्ट कराने के लिए नगरपालिका के स्वास्थ्य अधिकारी को पत्र लिखिए।

3. आरोह भाग गद्य पाठ – 1 (भक्तिन) प्रश्नोंत्तर, पाठ–2 (बाजार दर्शन) प्रश्नोंत्तर

MATHS

Very Short Answer Questions (1 mark)

1. Find the value of x and y if :

$$2\begin{bmatrix} 1 & 3 \\ 0 & x \end{bmatrix} + \begin{bmatrix} y & 0 \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} 5 & 6 \\ 1 & 8 \end{bmatrix}$$

[CBSE (Delhi) 2008]

2. If $\begin{bmatrix} x+3 & 4 \\ y-4 & x+y \end{bmatrix} = \begin{bmatrix} 5 & 4 \\ 3 & 9 \end{bmatrix}$, find x and y.

[CBSE (F) 2008]

3. If matrix $A = [1\ 2\ 3]$ write AA', where A' is the transpose of matrix A.   [CBSE (Delhi) 2009]

4. Find the value of x, if $\begin{pmatrix} 3x+y & -y \\ 2y-x & 3 \end{pmatrix} = \begin{pmatrix} 1 & 2 \\ -5 & 3 \end{pmatrix}$.

[CBSE (AI) 2009]

5. If $A = \begin{pmatrix} 2 & 3 & -5 \\ 1 & 4 & 9 \\ 0 & 7 & -2 \end{pmatrix}$ and $B = \begin{pmatrix} 2 & 1 & -1 \\ -3 & 4 & 4 \\ 1 & 5 & 2 \end{pmatrix}$, then find $a_{22} + b_{21}$.

[CBSE (F) 2009]

6. If $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}\begin{pmatrix} 3 & 1 \\ 2 & 5 \end{pmatrix} = \begin{pmatrix} 7 & 11 \\ k & 23 \end{pmatrix}$, then write the value of k.

[CBSE (Delhi) 2010]

7. If $A = \begin{pmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{pmatrix}$, then for what value of α is A an identity matrix?

[CBSE (Delhi) 2010]

8. Write a square matrix of order 2, which is both symmetric and skew-symmetric. [CBSE (F) 2010]

9. If $\begin{pmatrix} 3 & 4 \\ 2 & x \end{pmatrix}\begin{pmatrix} x \\ 1 \end{pmatrix} = \begin{pmatrix} 19 \\ 15 \end{pmatrix}$, find the value of x.

[CBSE (F) 2010]

10. For a 2×2 matrix, $A = [a_{ij}]$, whose elements are given by $a_{ij} = \dfrac{i}{j}$, write the value of a_{12}.
[CBSE (Delhi) 2011]

11. If a matrix has 5 elements, write all possible orders it can have.   [CBSE (AI) 2011]

12. Write the values of $x - y + z$ from the following equation :   [CBSE (F) 2011]

$$\begin{bmatrix} x+y+z \\ x+z \\ y+z \end{bmatrix} = \begin{bmatrix} 9 \\ 5 \\ 7 \end{bmatrix}$$

13. If $\begin{pmatrix} 2 & 3 \\ 5 & 7 \end{pmatrix}\begin{pmatrix} 1 & -3 \\ -2 & 4 \end{pmatrix} = \begin{pmatrix} -4 & 6 \\ -9 & x \end{pmatrix}$, write the value of x.

[CBSE (Delhi) 2012]

14. Simplify : $\cos\theta\begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix} + \sin\theta\begin{bmatrix} \sin\theta & -\cos\theta \\ \cos\theta & \sin\theta \end{bmatrix}$

15. Find value of $x + y$ from the following equation :

$$2\begin{bmatrix} x & 5 \\ 7 & y-3 \end{bmatrix} + \begin{bmatrix} 3 & -4 \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} 7 & 6 \\ 15 & 14 \end{bmatrix}$$

16. If $A^T = \begin{bmatrix} 3 & 4 \\ -1 & 2 \\ 0 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 2 & 1 \\ 1 & 2 & 3 \end{bmatrix}$, then find $A^T - B^T$.

17. If A is a square matrix such that $A^2 = A$, then write the value of $(I+A)^2 - 3A$. [CBSE (F) 2012]

18. If $x\begin{bmatrix} 2 \\ 3 \end{bmatrix} + y\begin{bmatrix} -1 \\ 1 \end{bmatrix} = \begin{bmatrix} 10 \\ 5 \end{bmatrix}$, write the value of x.

19. Find the value of a, b, c and d if $\begin{bmatrix} a-b & 2a+c \\ 2a-b & 3c+d \end{bmatrix} = \begin{bmatrix} -1 & 5 \\ 0 & 13 \end{bmatrix}$

20. If $\begin{bmatrix} 9 & -1 & 4 \\ -2 & 1 & 3 \end{bmatrix} = A + \begin{bmatrix} 1 & 2 & -1 \\ 0 & 4 & 9 \end{bmatrix}$, then find the matrix A.

21. For what value of x, is the matrix $A = \begin{bmatrix} 0 & 1 & -2 \\ -1 & 0 & 3 \\ x & -3 & 0 \end{bmatrix}$ a skew-symmetric matrix?

22. If matrix $A = \begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix}$ and $A^2 = kA$, then write the value of k.

23. If A is a 3×3 matrix, whose elements are given by $a_{ij} = \frac{1}{3}|-3i + j|$, then write the value of a_{23}.

24. If $2\begin{bmatrix} 3 & 4 \\ 5 & x \end{bmatrix} + \begin{bmatrix} 1 & y \\ 0 & 1 \end{bmatrix} = \begin{bmatrix} 7 & 0 \\ 10 & 5 \end{bmatrix}$, find $(x - y)$.

25. Solve the following matrix equation for x : $[x \ 1]\begin{bmatrix} 1 & 0 \\ -2 & 0 \end{bmatrix} = O$.

26. If A is a square matrix such that $A^2 = A$, then write the value of $7A - (I + A)^3$, where I is an identity matrix.

27. If $\begin{bmatrix} x-y & z \\ 2x-y & w \end{bmatrix} = \begin{bmatrix} -1 & 4 \\ 0 & 5 \end{bmatrix}$, find the value of $x + y$.]

28. Use elementary column operation $C_2 \rightarrow C_2 - 2C_1$ in the matrix equation $\begin{bmatrix} 4 & 2 \\ 3 & 3 \end{bmatrix} = \begin{bmatrix} 1 & 2 \\ 0 & 3 \end{bmatrix}\begin{bmatrix} 2 & 0 \\ 1 & 1 \end{bmatrix}$.

29. If $\begin{bmatrix} a+4 & 3b \\ 8 & -6 \end{bmatrix} = \begin{bmatrix} 2a+2 & b+2 \\ 8 & a-8b \end{bmatrix}$ write the value of $a - 2b$.

Answer Questions (4 Marks)

1. Let $A = \begin{bmatrix} 3 & 2 & 5 \\ 4 & 1 & 3 \\ 0 & 6 & 7 \end{bmatrix}$. Than express A as a sum of two matrices such that one is symmetric and the other is skew-symmetric. *[CBSE (Delhi) 2008]*

2. If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$, verify that $A^2 - 4A - 5I = 0$. *[CBSE (Delhi) 2008]*

3. Using elementary transformations, find the inverse of the following matrix:
$\begin{bmatrix} 1 & 2 & 3 \\ 2 & 5 & 7 \\ -1 & -4 & -5 \end{bmatrix}$. *[CBSE (AI) 2008]*

4. Using elementary transformations, find the inverse of the following matrix:
$\begin{bmatrix} 2 & -1 & 4 \\ 4 & 0 & 2 \\ 3 & -2 & 7 \end{bmatrix}$. *[CBSE (PKL) 2008]*

5. Obtain the inverse of the following matrix, using elementary operations:
$A = \begin{bmatrix} 3 & 0 & -1 \\ 2 & 3 & 0 \\ 0 & 4 & 1 \end{bmatrix}$. *[CBSE (AI) 2009]*

6. Using elementary transformations, find the inverse of the following matrix:
$\begin{pmatrix} 2 & 5 \\ 1 & 3 \end{pmatrix}$. *[CBSE (Delhi) 2010]*

7. Express the following matrix as the sum of a symmetric and skew-symmetric matrix, and verify your result:
$$\begin{pmatrix} 3 & -2 & -4 \\ 3 & -2 & -5 \\ -1 & 1 & 2 \end{pmatrix}.$$
[CBSE (AI) 2010]

8. For the following matrices A and B, verify that $(AB)' = B'A'$.
$$A = \begin{pmatrix} 1 \\ -4 \\ 3 \end{pmatrix}, B = (-1 \ \ 2 \ \ 1)$$
[CBSE (AI) 2010]

9. Using elementary transformations, find the inverse of the following matrix:
$$A = \begin{pmatrix} 6 & 5 \\ 5 & 4 \end{pmatrix}.$$
[CBSE (F) 2010]

10. Using elementary transformations, find the inverse of the matrix:
$$\begin{bmatrix} 1 & 3 & -2 \\ -3 & 0 & -1 \\ 2 & 1 & 0 \end{bmatrix}.$$
[CBSE (Delhi) 2011]

11. Using elementary transformations, find the inverse of the matrix:
$$\begin{bmatrix} -1 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}.$$

12. If $A^{-1} = \begin{bmatrix} 3 & -1 & 1 \\ -15 & 6 & -5 \\ 5 & -2 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$, find $(AB)^{-1}$.

Answers

Very Short Answer Questions

1. $x = 3, y = 3$ 2. $x = 2, y = 7$ 3. $[14]$ 4. $x = 1, y = -2$ 5. 17

6. 17 7. $\alpha = 0°$ 8. $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$ 9. 5 10. $\frac{1}{2}$

11. $1 \times 5, 5 \times 1$ 12. 1 13. 13 14. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ 15. 11

16. $\begin{bmatrix} 4 & 3 \\ -3 & 0 \\ -1 & -2 \end{bmatrix}$ 17. I 18. 3 19. $a = 1, b = 2, c = 3, d = 4$

20. $\begin{bmatrix} 8 & -3 & 5 \\ -2 & -3 & -6 \end{bmatrix}$ 21. $x = 2$ 22. $k = 2$ 23. 1

24. $x - y = 10$ 25. $x = 2$ 26. $-I$ 27. $x + y = 3$

28. $\begin{bmatrix} 4 & -6 \\ 3 & -3 \end{bmatrix} = \begin{bmatrix} 1 & 2 \\ 0 & 3 \end{bmatrix}\begin{bmatrix} 2 & -4 \\ 1 & -1 \end{bmatrix}$ 29. $a = 2, b = 1, a - 2b = 0$

Short Answer Questions

1. $\begin{bmatrix} 3 & 3 & \frac{5}{2} \\ 3 & 1 & \frac{9}{2} \\ \frac{5}{2} & \frac{9}{2} & 7 \end{bmatrix} + \begin{bmatrix} 0 & -1 & \frac{5}{2} \\ 1 & 0 & \frac{-3}{2} \\ \frac{-5}{2} & \frac{3}{2} & 0 \end{bmatrix}$ 3. $\begin{bmatrix} 3 & -2 & -1 \\ -4 & 1 & -1 \\ 2 & 0 & 1 \end{bmatrix}$ 4. $\begin{bmatrix} -2 & \frac{1}{2} & 1 \\ 11 & -1 & -6 \\ 4 & \frac{-1}{2} & -2 \end{bmatrix}$

5. $\begin{bmatrix} 3 & -4 & 3 \\ -2 & 3 & -2 \\ 8 & -12 & 9 \end{bmatrix}$ 6. $\begin{bmatrix} 3 & -5 \\ -1 & 2 \end{bmatrix}$ 7. $\begin{bmatrix} 3 & \frac{1}{2} & \frac{-5}{2} \\ \frac{1}{2} & -2 & -2 \\ \frac{-5}{2} & -2 & 2 \end{bmatrix} + \begin{bmatrix} 0 & \frac{-5}{2} & \frac{-3}{2} \\ \frac{5}{2} & 0 & -3 \\ \frac{3}{2} & 3 & 0 \end{bmatrix}$

9. $\begin{bmatrix} -4 & 5 \\ 5 & -6 \end{bmatrix}$ 10. $\begin{bmatrix} 1 & -2 & -3 \\ -2 & 4 & 7 \\ -3 & 5 & 9 \end{bmatrix}$ 11. $\begin{bmatrix} 1 & -1 & 1 \\ -8 & 7 & -5 \\ 5 & -4 & 3 \end{bmatrix}$ 12. $\begin{bmatrix} 9 & -3 & 5 \\ -17 & 7 & -6 \\ 1 & 0 & 2 \end{bmatrix}$

Very Short Answer Questions (1 mark)

1. Find the cofactor of a_{12} in the following : $\begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$.

2. Evaluate : $\begin{vmatrix} \sin 30° & \cos 30° \\ -\sin 60° & \cos 60° \end{vmatrix}$.

3. If $\begin{vmatrix} 2x+5 & 3 \\ 5x+2 & 9 \end{vmatrix} = 0$, find x.

4. Write the value of the determinant $\begin{vmatrix} 2 & 3 & 4 \\ 4 & 6 & 8 \\ 6x & 9x & 12x \end{vmatrix}$.

5. Write the value of determinant $\begin{vmatrix} a-b & b-c & c-a \\ b-c & c-a & a-b \\ c-a & a-b & b-c \end{vmatrix}$.

6. Find the value of x if $\begin{vmatrix} x & 4 \\ 2 & 2x \end{vmatrix} = 0$. **[CBSE (AI) 2009]**

7. If $A = \begin{bmatrix} 1 & 2 \\ 4 & 4 \end{bmatrix}$, then find the value of k if $|2A| = k|A|$. **[CBSE (F) 2009]**

8. What is the value of the determinant $\begin{vmatrix} 0 & 2 & 0 \\ 2 & 3 & 4 \\ 4 & 5 & 6 \end{vmatrix}$? **[CBSE (Delhi) 2010]**

9. If A is a square matrix of order 3 and $|3A| = K|A|$, then write the value of K. **[CBSE (Delhi) 2010]**

10. What positive value of x makes the following pair of determinants equal? $\begin{vmatrix} 2x & 3 \\ 5 & x \end{vmatrix}, \begin{vmatrix} 16 & 3 \\ 5 & 2 \end{vmatrix}$ **[CBSE (AI) 2010]**

11. Write the adjoint of the matrix : $\begin{pmatrix} 2 & -1 \\ 4 & 3 \end{pmatrix}$. **[CBSE (AI) 2010]**

12. What is the value of the following determinant? $$\Delta = \begin{vmatrix} 4 & a & b+c \\ 4 & b & c+a \\ 4 & c & a+b \end{vmatrix}$$ **[CBSE (F) 2010]**

13. For what value of x, the matrix $\begin{bmatrix} 5-x & x+1 \\ 2 & 4 \end{bmatrix}$ is singular? **[CBSE (Delhi) 2011]**

14. Write A^{-1} for $A = \begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$. **[CBSE (Delhi) 2011]**

15. Evaluate : $\begin{vmatrix} \cos 15° & \sin 15° \\ \sin 75° & \cos 75° \end{vmatrix}$ **[CBSE (AI) 2011]**

16. If $A = \begin{bmatrix} 2 & 3 \\ 5 & -2 \end{bmatrix}$, write A^{-1} in terms of A. **[CBSE (AI) 2011]**

17. If $\begin{vmatrix} x & x \\ 1 & x \end{vmatrix} = \begin{vmatrix} 3 & 4 \\ 1 & 2 \end{vmatrix}$, write the positive value of x. **[CBSE (F) 2011]**

18. If $A = \begin{vmatrix} 5 & 3 & 8 \\ 2 & 0 & 1 \\ 1 & 2 & 3 \end{vmatrix}$, write the minor of the element a_{23}.

[CBSE (Delhi) 2012]

19. Let A be a square matrix of order 3×3. Write the value of $|2A|$, where $|A| = 4$. [CBSE (AI) 2012]

20. Write the value of the determinant : $\begin{vmatrix} 102 & 18 & 36 \\ 1 & 3 & 4 \\ 17 & 3 & 6 \end{vmatrix}$

[CBSE (F) 2012]

21. If $\begin{vmatrix} x+1 & x-1 \\ x-3 & x+2 \end{vmatrix} = \begin{vmatrix} 4 & -1 \\ 1 & 3 \end{vmatrix}$, then write the value of x.

[CBSE (Delhi) 2013]

22. If A_{ij} is the cofactor of the element a_{ij} of the determinant $\begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$, then write the $a_{32} \cdot A_{32}$.

23. If A is a square matrix and $|A| = 2$, then write the value of $|AA'|$, where A' is the transpose of A.

24. If $A = \begin{bmatrix} 3 & 10 \\ 2 & 7 \end{bmatrix}$, then write A^{-1}.

25. If $\begin{vmatrix} 2x & 5 \\ 8 & x \end{vmatrix} = \begin{vmatrix} 6 & -2 \\ 7 & 3 \end{vmatrix}$, wriete the value of x.

26. If $\begin{vmatrix} 3x & 7 \\ -2 & 4 \end{vmatrix} = \begin{vmatrix} 8 & 7 \\ 6 & 4 \end{vmatrix}$, find the value of x.

27. If A is a 3×3 matrix, $|A| \ne 0$ and $|3A| = k|A|$, then write the value of k.

Short and Long Answer Questions (4, 6 marks)

1. Using properties of determinants prove the following :

$$\begin{vmatrix} 1+a^2-b^2 & 2ab & -2b \\ 2ab & 1-a^2+b^2 & 2a \\ 2b & -2a & 1-a^2-b^2 \end{vmatrix} = (1+a^2+b^2)^3$$

2. Using properties of determinants prove the following :

$$\begin{vmatrix} a^2+1 & ab & ac \\ ab & b^2+1 & bc \\ ca & cb & c^2+1 \end{vmatrix} = 1+a^2+b^2+c^2$$

3. Using properties of determinant, show that :

$$\begin{vmatrix} 1 & a^2+bc & a^3 \\ 1 & b^2+ca & b^3 \\ 1 & c^2+ab & c^3 \end{vmatrix} = -(a-b)(b-c)(c-a)(a^2+b^2+c^2)$$

4. Using inverse of matrix, solve the following system of equation:
$2x - 3y + 5z = 11, \quad 3x + 2y - 4z = -5, \quad x + y - 2z = -3$

Using properties of determinants, prove the following (Q. 7 to 12)

5. $\begin{vmatrix} 1 & 1+p & 1+p+q \\ 2 & 3+2p & 4+3p+2q \\ 3 & 6+3p & 10+6p+3q \end{vmatrix} = 1$.

6. $\begin{vmatrix} 1 & x & x^2 \\ x^2 & 1 & x \\ x & x^2 & 1 \end{vmatrix} = (1-x^3)^2$.

11. $\begin{vmatrix} (b+c)^2 & ab & ca \\ ab & (a+c)^2 & bc \\ ac & bc & (a+b)^2 \end{vmatrix} = 2abc(a+b+c)^3.$

12. $\begin{vmatrix} x & x^2 & 1+px^3 \\ y & y^2 & 1+py^3 \\ z & z^2 & 1+pz^3 \end{vmatrix} = (1+pxyz)(x-y)(y-z)(z-x),$ where p is any scalar.

13. Using matrices, solve the following system of equations:

$x + 2y - 3z = -4$; $2x + 3y + 2z = 2$; $3x - 3y - 4z = 11$

14. If a, b, c are positive and unequal, show that the value of determinant $\begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix}$ is negative.

12. If $A = \begin{pmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 1 & -2 \end{pmatrix}$, find A^{-1}. Using A^{-1} solve the following system of equations:

$2x - 3y + 5z = 16$; $3x + 2y - 4z = -4$; $x + y - 2z = -3$

13. Prove the following, using properties of determinants :

$\begin{vmatrix} a+bx^2 & c+dx^2 & p+qx^2 \\ ax^2+b & cx^2+d & px^2+q \\ u & v & w \end{vmatrix} = (x^4-1)\begin{vmatrix} b & d & q \\ a & c & p \\ u & v & w \end{vmatrix}$

14. Using properties of determinants, solve the following for x:

$\begin{vmatrix} x-2 & 2x-3 & 3x-4 \\ x-4 & 2x-9 & 3x-16 \\ x-8 & 2x-27 & 3x-64 \end{vmatrix} = 0$

14. Using properties of determinants, solve the following for x:

$\begin{vmatrix} x+a & x & x \\ x & x+a & x \\ x & x & x+a \end{vmatrix} = 0$

15. Prove, using properties of determinants :

$\begin{vmatrix} y+k & y & y \\ y & y+k & y \\ y & y & y+k \end{vmatrix} = k^2(3y+k)$

16. Use product $\begin{bmatrix} 1 & -1 & 2 \\ 0 & 2 & -3 \\ 3 & -2 & 4 \end{bmatrix}\begin{bmatrix} -2 & 0 & 1 \\ 9 & 2 & -3 \\ 6 & 1 & -2 \end{bmatrix}$ to solve the system of equations:

$x - y + 2z = 1$; $2y - 3z = 1$; $3x - 2y + 4z = 2$

17. Solve for x, y, z :

$\dfrac{2}{x} + \dfrac{3}{y} + \dfrac{10}{z} = 4$; $\dfrac{4}{x} - \dfrac{6}{y} + \dfrac{5}{z} = 1$; $\dfrac{6}{x} + \dfrac{9}{y} - \dfrac{20}{z} = 2.$

18. Using matrices, solve the following system of linear equations:

$x - y + 2z = 7$; $3x + 4y - 5z = -5$; $2x - y + 3z = 12$

19. Using properties of determinant show that:

$\begin{vmatrix} b+c & q+r & y+z \\ c+a & r+p & z+x \\ a+b & b+q & x+y \end{vmatrix} = 2\begin{vmatrix} a & p & x \\ b & q & y \\ c & r & z \end{vmatrix}$

20. Using properties of determinant prove that:

$\begin{vmatrix} b+c & a & a \\ b & c+a & b \\ c & c & a+b \end{vmatrix} = 4abc$

21. Using matrices solve the following system of equations:
$$2x + 3y + 3z = 5$$
$$x - 2y + z = -4$$
$$3x - y - 2z = 3$$

22. Using properties of determinants, prove that
$$\begin{vmatrix} a & a+b & a+b+c \\ 2a & 3a+2b & 4a+3b+x \\ 3a & 6a+3b & 10a+6b+3c \end{vmatrix} = a^3$$

23. Using matrix solve the following system of equations:
$$x - y + z = 4$$
$$2x + y - 3z = 0$$
$$x + y + z = 2$$

OR

If $A^{-1} = \begin{bmatrix} 3 & -1 & 1 \\ -15 & 6 & -5 \\ 5 & -2 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$ then find $(AB)^{-1}$.

24. A school wants to award its students for the values of Honesty, Regularity and Hard work with a total cash award of ₹ 6,000. Three times the award money for Hard work added to that given for honesty amounts to ₹ 11,000. The award money given for Honesty and Hard work together is double the one given for Regularity. Represent the above situation algebraically and find the award money for each value, using matrix method. Apart from these values, namely, Honesty, Regularity and Hard work, suggest one more value which the school must include for award.

25. Using properties of determinants, prove the following:
$$\begin{vmatrix} x & x+y & x+2y \\ x+2y & x & x+y \\ x+y & x+2y & x \end{vmatrix} = 9y^2 (x+y)$$

Answers

Very Short Answer Questions

1. 46	2. 1	3. -13	4. 0	5. 0	6. ±2	7. 4
8. 8	9. 27	10. 4	11. $\begin{bmatrix} 3 & 1 \\ -4 & 2 \end{bmatrix}$	12. 0	13. 3	14. $\begin{bmatrix} 3 & -5 \\ -1 & 2 \end{bmatrix}$
15. 0	16. $\frac{1}{19}A$	17. 2	18. 7	19. 32	20. 0	21. $x = 2$
22. 110	23. 4	24. $\begin{bmatrix} 7 & -10 \\ -2 & 3 \end{bmatrix}$		25. $x = \pm 6$	26. $x = -2$	27. $k = 27$

Short and Long Answer Questions

6. $x = 1, y = 2, z = 3$ 9. $x = 3, y = -2, z = 1$ 11. $A^{-1} = \begin{bmatrix} 0 & 1 & -2 \\ -2 & 9 & -23 \\ -1 & 5 & -13 \end{bmatrix}$, $x = 2, y = 1, z = 3$

13. $x = 4$ 14. $x = \dfrac{-a}{3}$ 16. $x = 0, y = 5, z = 3$ 17. $x = 2, y = 3, z = 5$ 18. $x = 1, y = 1, z = 1$

21. $x = 2, y = 2, z = -1$ 23. $x = 2, y = -1, z = 1$; OR $(AB)^{-1} = \begin{bmatrix} 9 & -3 & 5 \\ -2 & 1 & 0 \\ 1 & 0 & 2 \end{bmatrix}$

24. Award money for (i) honesty = ₹ 500 (ii) regularity = ₹ 2,000 (iii) Hard work = ₹ 3500; The school can also include **Punctuality** for students.

26. $x = 3, y = 4, z = 5$; The management can include **cleanliness** for awarding the members.

27. No. of students in 1st group = 5, IInd group = 3, IIIrd group = 2
Punctuality may also be included for giving awards.

29. i.e., ₹ 100 for discipline
₹ 200 for politeness and
₹ 300 for punctuality
One more value like sincerity or truthfulness can be awarded.

31. i.e., ₹ 200 for sincerity,
₹ 300 for truthfulness and ₹ 400 for helpfulness.
One more value like honesty, kindness etc, can be awarded.

33. i.e., ₹ 300 for tolerance, ₹ 400 for kindness and ₹ 500 for leadership are awarded.
One more value like punctuality, honesty etc may be awarded.

FINE ART
Assignment

Submit your pencil sketch file positively after summer break.

- ➢ Create a object study of your choice and paint it with tempera watercolors.

- ➢ Draw any two compositions on an A1 size seat and fill it with tempera water colours.

INFORMATION TECHNOLOGY

(1) Write SQL commands for the following on the basis of given table STUDENT

Table : STUDENT1

No.	Name	Stipend	Stream	AvgMark	Grade	Class
1	Karan	400.00	Medical	78.5	B	12B
2	Divakar	450.00	Commerce	89.2	A	11C
3	Divya	300.00	Commerce	68.6	C	12C
4	Arun	350.00	Humanities	73.1	B	12C
5	Sabina	500.00	Nonmedical	90.6	A	11A
6	John	400.00	Medical	75.4	B	12B
7	Robert	250.00	Humanities	64.4	C	11A
8	Rubina	450.00	Nonmedical	88.5	A	12A
9	Vikas	500.00	Nonmedical	92.0	A	12A
10	Mohan	300.00	Commerce	67.5	C	12C

(a) Select all the Nonmedical stream students from STUDENT1.

(b) List the names of those students who are in class 12 sorted by Stipend.

(c) List all students sorted by AvgMark in descending order

(d) Display a report, listing Name, Stipend, Stream and amount of stipend received in a year assuming that the Stipend is paid every month.

(2) Write SQL queries for the following :

(a) Insert all those records of table Accounts into table *Pending* where amt_outstanding is more than 10000.

(b) Increase salary of employee records by 10% (*table employee*).

(c) Add a constraint in table Empl that declares column Grade not null.

(d) Drop the table Empl.

(3) Consider the table TEACHER given below. Write commands in SQL for (*i*) to (*iv*) and output for (*v*) to (*viii*)

TEACHER

ID	Name	Department	Hiredate	Category	Gender	Salary
1.	Tanya Nanda	SocialStudies	1994-03-17	TGT	F	25000
2.	Saurabh Sharma	Art	1990-02-12	PRT	M	20000
3.	Nandita Arora	English	1980-05-16	PGT	F	30000
4.	James Jacob	English	1989-10-16	TGT	M	25000
5.	Jaspreet Kaur	Hindi	1990-08-01	PRT	F	22000
6.	Disha Sehgal	Math	1980-03-17	PRT	F	21000
7.	Siddharth Kapoor	Science	1994-09-02	TGT	M	27000
8.	Sonali Mukherjee	Math	1980-11-17	TGT	F	24500

(*i*) To display all information about teachers of PGT category.

(*ii*) To list the names of female teachers of Hindi department.

(*iii*) To list names, departments and date of hiring of all the teachers in ascending order of date of joining

(*iv*) `SELECT DISTINCT(category) FROM teacher ;`

ENGLISH

(to be done in a Project File)

1. Collect three invitation cards of different events and paste them .
2. Collect three job advertisements from English newspaper and paste them .Write job applications for the same .
3. Collect 3 articles on different topics from English newspaper and paste them. Find new words from these articles, search their meanings and write the same.

TOPICS OF SPEECH (ASL)
HUMANITIES – D

In order to enhance the Listening and Speaking competencies for internal Assessment as per CBSE guidelines, Students need to prepare a speech on the given topics according to their Roll no.(200 words)

R.NO.	TOPICS NAME
1.	All we have to fear is fear itself
2.	Influence of western culture
3.	Change is permanent
4.	Non-violence – The supreme religion
5.	Opportunity seldom knocks twice at the same door.
6.	Time is money.
7.	A stitch in time saves nine
8.	Education : 'Panacea for all'
9.	Child labour : A stain on the face of mankind
10.	Significance of domestic chores
11.	How can you contribute to your society / country
12.	Money makes the mare go.
13.	Books are man's best friend.
14.	Winners never quit, Quitters never win.
15.	Challenges faced by teachers of 21st Century.
16.	Challenges faced by students of 21st century.
17.	Media : The fourth pillar of democracy
18.	Cleanliness is next to Godliness.
19.	He who wants everything, ends up with nothing.
20.	Solitude : Boon for wise, Bane for fools
21.	Our mind is like a parachute that works only when it is open.
22.	Covid – 19 – A pandemic
23.	Rights and duties of an individual
24.	Covid – 19 : A Pandemic
25.	World on the verge of IIIrd world war
26.	Compassion, Generosity and charity : Important virtues
27.	Easy to preach ; difficult to follow
28.	Necessity is the mother of invention
29.	Are developed countries really developed ?
30.	Wisdom cannot be attained through education
31.	Changing values in 21st century
32.	Role of UNO in 21st century
33.	Entrepreneurship. Its role in development.
34.	Role of native language in country's development
35.	Human beings : The most selfish race
36.	Human beings : The most rational animal
37.	Role of parents
38.	Community workers / Helpers
39.	Cyber crime
40.	Keyboard warriors
41.	Significance of writing skills
42.	Jack of all but master of one

Q.1

LOANS

ID	CUS_NAME	LOAN_AMT	INSTALLMENT	INT_RATE	STARTDATE	AGE
C1	SAMEER	300000	36	12.00	2019-07-19	36
C2	ARYAN	500000	60	10.00	2018-03-22	65
C4	RAM	800000	48	NULL	2018-03-08	48
C6	PRERNA	300000	24	10.00	2020-12-06	54
C7	SHIKHA	900000	36	12.50	2020-01-03	42
C8	RADHA	1000000	60	NULL	2017-07-29	62

He has written the following queries:

(i) select (year(curdate)-year(StartDate))*12 as Installments_over

from loans

(ii) select CUS_NAME,monthname(Startdate) from LOANS where 60-age<=0;

(OR)

Based on the table given above, help Harshit, write queries for the following:

(i) To display the earliest loan start date.

(ii) To display the names and loan amount   of those customers whose loan
started in 'March'.

Make a report on political system of Nagaland and Rajasthan with special reference on autonomy given to the tribal people.

NB : Repeat, revise and Practice the entire, syllabus covered in class till date for better performance in **PERIODIC TEST – 1.**