Adarsh Public School
Summer Holiday Home work
Class – 12th

CHEMISTERY

1) Unit -6 [Halo alkanes and Haloarenes)

A. Write answers of following questions in home work note book

Q1. What are ambident nucleophiles ? Explain jwith an example

Q2. (a) Haloalkanes easily dissolve in organic solvent, why?

(b) Alkyl halides, though polar, are immiscible with water?

(c) What is known as a racemic mixture? Give an example.

(d) Although chlorine is an electron withdrawing group, yet it is ortho and para -directing in electrophile aromatic substitution reaction why?

(e) Which one in the following pairs undergo Sul substitulion reaction faster and why?

(f) What are enantiomers? Draw the structures of the possible enantiomers of 3-methylpent-1-ene.

(g) What are Chiral and achiral objects?

B. Do exercise of Unit VI [Haloalkanes and Haloarenes] NCERT book.

2) Unit-7 [Alcohols, phenols and Ethers]

A. Write answers of following questions in home work note book...

(a) what is denatured alcohols?

b) How is phenol prepared from

    (i) cumene   (ii) Benzene sulphonic acid

    (iii) Benzene diazonium salt   (iv) chlorobenzere.

(c) How are the following conversions carried out?

    (i) Propene to propan-2-of   (ii) Ethyl magnesium chloride to propan-1-of

(d) write chemical test to distinguish between compounds

    (i) Phenol and benzyl alcohol   (ii) Butan-2-ol and 2-methyl propan-2-ol

(e) An organic compound 'A' having molecular formula C_6H_6O gives a characteristic colour with neutral $FeCl_3$. A on treatment with CO_2 and $NaOH$ at 400 K under pressure gives 'B' which on acidification gives a compound C. The compound C reacts with acetyl chloride gives 'D' which is popular as aspirin (pain killer). Write the structures of A, B, C and D and write the reactions involved.

B. Do exercise of unit vil [Alcohols, bhenol and Ethers] NCERT. Unit I [solution]

Learn the following:-

Henry's law and its application, Raoult's law, ideal solution and non-ideal solution, positive deviations and negative deviation from Raoults law, examples of positive deviations from Raoulti law, azeotropes and types of azeotijopes, osmosis, reverse osmosis osmotic pressure.

ENGLISH

1) Take last four years Board papers and do all the unseen passages asked in them.

2) From same Board papers, Do the notices asked in them.

3) Five formal or informal invitations and replies from board papers.

4) Write the summaries of the following chapters.

    a) The Last lesson   b) The Enemy

    c) The Lost spring   d) The Tiger king

5) Any Five letters asked in board papers.

6) Complete your English notebook.

PHYSICS

1) 50 Numericals in each chapter (Min 150 Questions).
2) All Derivation from each chapter two-two times.
3) Learn all formula & write two - two times.
4) One project file based on CBSE syllabus.

BUSINESS STUDIES:

1) Revise all chapters covered in class
2) 'Lack of proper management results in wastage of time, money and efforts'. In the fight of

this statement, explain any four points of importance of management.
3) 'Management is a series of continuous, inter-related functions with no pre-determined sequence'. Explain. By diagram.

- ACTIVITY:-
    - ✓ The students are required to visit any one of the following: 1. A departmental store. 2. An Industrial unit. 3. A fast food outlet. 4. Super market. 5. Mall. 6. Any other Business Organization. They are required to observe the application of the 14 Principles of management by Henry Fayol & Write the principles with the help of diagram.

OR

    - ✓ Students are requested to select any product/services and make a study on that identified product keeping in mind the following factors:-
        1. Why have they selected this product/service?
        2. Find out '5' competitive brands that exist in the market.
        3. What permission and licenses would be required to make the product?
        4. Does your product have any range give details?
        5. What is the name of your product?
        6. Enlist its features.
        7. Draw the 'Label' of your product.
        8. Draw a logo for your product.
        9. Draft a tag line.
        10. How will your product be packaged?
        11. Which channel of distribution are you going to use? Give reasons for selection?
        12. What is going to be your selling price? (i) To consumer (ii) To retailer (iii) To wholesaler
        13. List 5 ways of promoting your product.
        14. What means of transport you will use and why?
        15. Draft a social message for your label.

ACCOUNTANCY:

1) Revise all chapters covered in class.
2) WORKSHEET-
1. Sachin Tendulkar and Virat Kohli entered into partnership on 1st January 2022 contributing ₹ 20,000 and ₹ 15,000 as capital. Sachin Tendulkar invested ₹10,000 as additional capital on 1st April, whereas Virat Kohli bought additional capital of ₹ 5,000 on 1st October. They earned a profit of ₹ 10,500 during the year. Profit are to be shared in their capital ratio. Calculate partner's share of profit and pass necessary journal entry.

2. A and B are partners, sharing profits and losses equally. On 1st April, 2012, their capitals were ₹ 20,000 and ₹ 18,000 respectively. The Net Profits for the year ending 31st March ,

2013 without charging interest on capital, amounted to ₹ 5,600. Calculate the amount to which each of the partner is entitled (a)when the partnership deed provides for interest on capital at 10% per annum, prior to division thereof and (b) when it is silent as regards to interest on capital.

3. Ganesh and Sneha are partners in a firm. They share a profits and losses equally. Their monthly drawings are ₹ 2,000 each. Interest on drawings is to be changed @ 10% p.a. Calculate interest on Ganesh drawings for the year 1989 assuming drawings are made (i) in the beginning of every month,(ii) in the middle of every month, and (iii) at the end of every month.

4. A business has earned average profits of ₹ 1,00,000 during the last few years and the normal rate of return in similar business is 10%. Find out the value of goodwill by
   (i) Capitalization of super profit method.
   (ii) Super profit method, if the goodwill is valued at 3 years' purchase of super profit.
   The assets of the business were ? 10,00,000 and its external liabilities ₹ 1,80,000.

5. Parth, Raman and Zaisha are partners in a firm manufacturing furniture. They have been sharing profits and losses in the ratio of 5 : 3 : 2. From 1st April, 2017 they decided to share future profits and losses in the ratio of 2 : 5 : 3. Their Balance Sheet showed a debit balance of ₹ 74,000 in Profit and Loss Account; balance of ₹ 36,000 in General Reserve and a balance of ₹ 12,000 in Workmen's Compensation Reserve. It was agreed that:
   (i) The goodwill of the firm be valued at ₹ 76,000.
   (ii) The stock (book value of ₹ 40,000) was to be depreciated by 8%.
   (iii) Creditors amounting to ₹ 900 were not likely to be claimed.
   (iv) Claim on account of Workmen's Compensation amounted to ₹ 20,000.
   (v) Investments (book value ₹ 38,000) were revalued at ₹ 40,000.
   Pass necessary journal entries for the above,

   ACTIVITY:-
Take any business unit, Writes its Name, History, Nature & Area of Business, Product or Service in which business deal, Prepare its 2 year Trading, Profit & Loss A/c, & Balance sheet, and Compare it on the basis of:-
   ✓ Sales
   ✓ Profit
   ✓ Capital
   ✓ Total Assets
   ✓ Total Liabilities
   ✓

ECONOMICS:

   1) Revise all chapters covered in class

   2) Solve all the following questions/Assignment in fair notebook

   3) Giving reasons classify the following into stocks and flows:
      I. Profits or loss   II. Capital   III. Savings   IV. Wealth
      V. Balance in a bank account   VI. GDP   VII. Inventory   VIII. Change in
inventory
      IX. Distance between Delhi and Mumbai   X. A hundred rupee note

2. Which of the following products are intermediate products and which are final products?
   I. Wheat and rice purchased by household
   II. Refrigerator installed by a firm

III. Purchase of ticket for train journey by an individual

IV. Purchase of a car by an employer for office use by his employees

V. Purchase of furniture by a firm

VI. Expenditure on maintenance by a firm.

3. 'Machine purchased is always a final good '.Do you agree? Give reasons.

4. Will the following be included or not in National income? Give reasons
    I. Money received by sale of an old house
    II. Scholarships received by students
    III. Remittances from abroad
    IV. Services of owner occupied building
    V. Expenditure on fertilizers by a farmer
    VI. Payment of bonus by a firm to its employees
    VII. Interest paid by banks on deposits by individuals
    VIII. Interest on public debt
    IX. Expenditure by govt of free education and health
    X. Festival gift from an employer

5. Will the following be a part of Domestic factor income ? Give reasons;
    I. Fees to mechanics paid by a firm
    II. Payment of corporate tax
    III. Addition to stocks during a year
    IV. Compensation of employees to the resident of Japan working in Indian embassy in Japan
    V. Payment of fees to a chartered Accountant by a firm
    VI. Rent received by an Indian resident from Russian embassy in India
    VII. Compensation given by insurance company to an injured worker
    VIII. Prize won in a lottery
    IX. Profits earned by a foreign bank in India
    X. Profits earned by a branch of SBI in England

6. Whether the following statements are true or false give reasons
    I. Market price is always >factor cost
    II. Capital formation is a flow
    III. Savings are a stock
    IV. Butter is only a final product
    V. Purchase of a car by a household is a part of GDCF
    VI. Depreciation is a flow

7. Define the following terms;
 a) Depreciation   b) Gross investment   c) Domestic territory   d) Resident   e) Expected obsolescence   f) NFIA   g) NIT

   ACTIVITY:-
     1) Prepare a project on any one of the following topics:
       a) Does India need another green revolution?
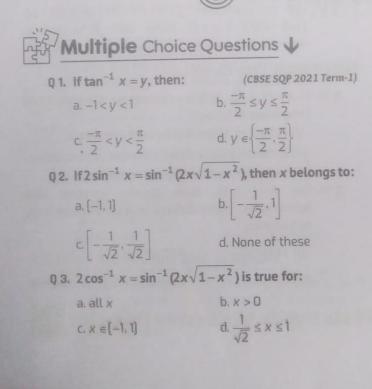   b) Growth story of India since 1947

HISTORY

   1) Make a Project File on Harappan Civilization or Mahabharta Complete ch.4 (learn and write Que / Ans).

SOCIOLOGY

   1) Make a Project File on any one topic
     (a) Modes Of Public Transport
     (b) Changing Aspirations of School Children at different ages
     (c) Use of Public Spaces

Q 9. Range of $f(x) = \sin^{-1} x + \tan^{-1} x + \sec^{-1} x$ is:

a. $\left(\dfrac{\pi}{4}, \dfrac{3\pi}{4}\right)$　　　　b. $\left[\dfrac{\pi}{4}, \dfrac{3\pi}{4}\right]$

c. $\left\{\dfrac{\pi}{4}, \dfrac{3\pi}{4}\right\}$　　　　d. None of these

Q 10. The principal value of $\cos^{-1}\left(\dfrac{1}{2}\right) + \sin^{-1}\left(-\dfrac{1}{\sqrt{2}}\right)$ is:

(NCERT EXEMPLAR; CBSE 2021 Term-1)

a. $\dfrac{\pi}{12}$　　b. π　　c. $\dfrac{\pi}{3}$　　d. $\dfrac{\pi}{6}$

Q 11. The principal value of $[\tan^{-1}\sqrt{3} - \cot^{-1}(-\sqrt{3})]$ is:

(CBSE 2021 Term-1, CBSE 2018)

a. π　　b. $-\dfrac{\pi}{2}$　　c. 0　　d. $2\sqrt{3}$

Q 12. The principal value of $\cot^{-1}(-1)$ is:

a. $\dfrac{\pi}{4}$　　　　b. $\dfrac{\pi}{3}$

c. $\dfrac{3\pi}{4}$　　　　d. None of these

Q 13. $\tan^{-1}\sqrt{3} - \sec^{-1}(-2)$ is equal to: *(NCERT EXEMPLAR)*

a. π　　b. $-\dfrac{\pi}{3}$　　c. $\dfrac{\pi}{3}$　　d. $\dfrac{2\pi}{3}$

Q 14. $\cot^{-1}(-\sqrt{3}) =$

a. $\dfrac{5\pi}{6}$　　b. $\dfrac{\pi}{3}$　　c. $\dfrac{\pi}{2}$　　d. $\dfrac{\pi}{4}$

Q 15. $\cos^{-1}\left(\dfrac{-\sqrt{3}}{2}\right) =$

a. $\dfrac{5\pi}{6}$　　b. $\dfrac{\pi}{6}$　　c. $\dfrac{4\pi}{9}$　　d. $\dfrac{2\pi}{3}$

Q 16. $\sec^{-1}\left(\dfrac{-2}{\sqrt{3}}\right) =$

a. $\dfrac{\pi}{6}$　　b. $\dfrac{\pi}{3}$　　c. $\dfrac{5\pi}{6}$　　d. $\dfrac{2\pi}{3}$

Q 17. $\sin\left[\dfrac{\pi}{3} + \sin^{-1}\left(\dfrac{1}{2}\right)\right]$ is equal to: *(CBSE 2023)*

a. 1　　b. $\dfrac{1}{2}$　　c. $\dfrac{1}{3}$　　d. $\dfrac{1}{4}$

Q 18. The value of $\cos\left[\cos^{-1}\left(-\dfrac{\sqrt{3}}{2}\right) + \dfrac{\pi}{6}\right]$ is:

a. 1　　　　b. −1

c. 0　　　　d. None of these

Q 19. The value of $\sin\left[\tan^{-1}(-\sqrt{3}) + \cos^{-1}\left(-\dfrac{\sqrt{3}}{2}\right)\right]$ is:

a. 1　　　　b. −1

c. 0　　　　d. None of these

Q 20. $\cos^{-1}\left(\cos\dfrac{7\pi}{6}\right)$ is equal to: *(NCERT EXERCISE)*

a. $\dfrac{7\pi}{6}$　　b. $\dfrac{5\pi}{6}$　　c. $\dfrac{\pi}{3}$　　d. $\dfrac{\pi}{6}$

Q 21. The value of $\tan^{-1}\left[\tan\left(\dfrac{3\pi}{4}\right)\right]$ is:

a. $\dfrac{\pi}{3}$　　b. $-\dfrac{\pi}{3}$　　c. $\dfrac{\pi}{4}$　　d. $-\dfrac{\pi}{4}$

Q 22. The value of $\sin^{-1}\left[\sin\left(-\dfrac{17\pi}{8}\right)\right]$ is: *(CBSE 2020)*

a. $-\dfrac{\pi}{6}$　　b. $\dfrac{\pi}{8}$　　c. $-\dfrac{\pi}{8}$　　d. $\dfrac{\pi}{12}$

Q 23. The principal value of $\cos^{-1}\left(-\sin\dfrac{7\pi}{6}\right)$ is:

a. $\dfrac{5\pi}{3}$　　　　b. $\dfrac{7\pi}{6}$

c. $\dfrac{\pi}{3}$　　　　d. None of these

Q 24. The value of the expression
$\sin[\cot^{-1}\{\cos(\tan^{-1} 1)\}]$ is: *(NCERT EXEMPLAR)*

a. 0　　b. 1　　c. $\dfrac{1}{\sqrt{3}}$　　d. $\sqrt{\dfrac{2}{3}}$

Q 25. The value of $\cos^{-1}\left(\cos\dfrac{5\pi}{3}\right) + \sin^{-1}\left(\sin\dfrac{5\pi}{3}\right)$ is:

a. $\dfrac{\pi}{2}$　　b. $\dfrac{5\pi}{3}$　　c. $\dfrac{10\pi}{3}$　　d. 0

Q 26. $\sin\left\{2\cos^{-1}\left(\dfrac{-3}{5}\right)\right\}$ is equal to:

a. $\dfrac{6}{26}$　　b. $\dfrac{24}{25}$　　c. $\dfrac{4}{5}$　　d. $-\dfrac{24}{25}$

Q 27. $\sin(\tan^{-1} x)$, where $|x| < 1$, is equal to:

(CBSE SQP 2021 Term-1)

a. $\dfrac{x}{\sqrt{1-x^2}}$　b. $\dfrac{1}{\sqrt{1-x^2}}$　c. $\dfrac{1}{\sqrt{1+x^2}}$　d. $\dfrac{x}{\sqrt{1+x^2}}$

Q 28. $2\sin^{-1}\sqrt{\dfrac{1-x}{2}} =$

a. $\cos^{-1} x$　　　　b. $2\cos^{-1}\sqrt{\dfrac{1+x}{2}}$

c. Both a. and b.　　　d. None of these

Q 29. If $0 < x < 1$, then $\sqrt{1+x^2}\,[(x\cos[\cot^{-1} x]$
$+ \sin[\cot^{-1} x])^2 - 1]^{1/2}$

a. $\dfrac{x}{\sqrt{1+x^2}}$　b. x　　c. $x\sqrt{1+x^2}$　d. $\sqrt{1+x^2}$

Q 30. $\cos[\tan^{-1}\{\sin(\cot^{-1} x)\}]$ is equal to:

a. $\sqrt{\dfrac{x^2+2}{x^2+3}}$　　　　b. $\sqrt{\dfrac{x^2+2}{x^2+1}}$

c. $\sqrt{\dfrac{x^2+1}{x^2+2}}$　　　　d. None of these

Q 31. If $\sin(\cot^{-1}(1+x)) = \cos(\tan^{-1} x)$, then $x =$

a. $\dfrac{1}{2}$　　b. 1　　c. 0　　d. $-\dfrac{1}{2}$

Q 32. If $\cot(\cos^{-1} x) = \sec\left(\tan^{-1}\dfrac{a}{\sqrt{b^2-a^2}}\right)$, then x equal to:

a. $\dfrac{b}{\sqrt{2b^2-a^2}}$　　　　b. $\dfrac{a}{\sqrt{2b^2-a^2}}$

c. $\dfrac{\sqrt{2b^2-a^2}}{a}$　　　　d. $\dfrac{\sqrt{2b^2-a^2}}{b}$

Q 33. The simplest form of $\tan^{-1}\left[\dfrac{\sqrt{1+x}-\sqrt{1-x}}{\sqrt{1+x}+\sqrt{1-x}}\right]$ is

(NCERT EXERCISE; CBSE 2021 Term)

a. $\dfrac{\pi}{4} - \dfrac{x}{2}$　　　　b. $\dfrac{\pi}{4} + \dfrac{x}{2}$

c. $\dfrac{\pi}{4} - \dfrac{1}{2}\cos^{-1} x$　　d. $\dfrac{\pi}{4} + \dfrac{1}{2}\cos^{-1} x$

Q 1. If $\tan^{-1} x = y$, then: (CBSE SQP 2021 Term-1)

a. $-1 < y < 1$

b. $\dfrac{-\pi}{2} \le y \le \dfrac{\pi}{2}$

c. $\dfrac{-\pi}{2} < y < \dfrac{\pi}{2}$

d. $y \in \left\{\dfrac{-\pi}{2}, \dfrac{\pi}{2}\right\}$

Q 2. If $2\sin^{-1} x = \sin^{-1}(2x\sqrt{1-x^2})$, then x belongs to:

a. $[-1, 1]$

b. $\left[-\dfrac{1}{\sqrt{2}}, 1\right]$

c. $\left[-\dfrac{1}{\sqrt{2}}, \dfrac{1}{\sqrt{2}}\right]$

d. None of these

Q 3. $2\cos^{-1} x = \sin^{-1}(2x\sqrt{1-x^2})$ is true for:

a. all x

b. $x > 0$

c. $x \in [-1, 1]$

d. $\dfrac{1}{\sqrt{2}} \le x \le 1$

Q 4. What is the domain of the function $\cos^{-1}(2x-3)$

(CBSE 2021 Term

a. $[-1, 1]$ b. $(1, 2)$ c. $(-1, 1)$ d. $[1, 2]$

Q 5. The domain of $y = \cos^{-1}(x^2 - 4)$ is:

(NCERT EXEMPL

a. $[3, 5]$

b. $[0, \pi]$

c. $[-\sqrt{5}, -\sqrt{3}] \cap [-\sqrt{5}, \sqrt{3}]$ d. $[-\sqrt{5}, -\sqrt{3}] \cup [\sqrt{3}, \sqrt{5}$

Q 6. The domain of the function defined $f(x) = \sin^{-1} x + \cos x$ is: (NCERT EXEMPL

a. $[-1, 1]$

b. $[-1, \pi + 1]$

c. $(-\infty, \infty)$

d. ϕ

Q 7. The domain of the function defined $f(x) = \sin^{-1} \sqrt{x - 1}$ is: (NCERT EXEMPLA

a. $[1, 2]$

b. $[-1, 1]$

c. $[0, 1]$

d. None of these

Q 8. The domain of the function $y = \sin^{-1}(-x^2)$ is:

(NCERT EXEMPLA

a. $[0, 1]$ b. $(0, 1)$ c. $[-1, 1]$ d. ϕ

Q3. Show that the determinant $\begin{bmatrix} x & \sin\theta & \cos\theta \\ -\sin\theta & -x & 1 \\ \cos\theta & 1 & x \end{bmatrix}$

is independent of θ.

(CBSE 2023)

Q4. Using determinants, find the area of $\triangle PQR$ with vertices $P(3,1)$, $Q(9,3)$ and $R(5,7)$. Also, find the equation of line PQ using determinants.

(CBSE 2023)

Q5. Find the inverse of the matrix $A = \begin{bmatrix} 1 & 2 \\ 2 & -1 \end{bmatrix}$.

Q6. If A and B are two invertible square matrices of order n, then prove that $(AB)^{-1} = B^{-1}A^{-1}$.

Q7. If $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} a & c \\ b & d \end{bmatrix}$, then find B^{-1} and show that $(A \cdot B)^{-1} = B^{-1} \cdot A^{-1}$.

Long Answer Type Questions ⬇

Q1. Find the cofactors of matrix $A = \begin{bmatrix} -1 & -2 & 3 \\ -2 & 2 & 1 \\ 4 & -5 & 2 \end{bmatrix}$ and prove that $(\text{adj } A)\, A = A\, (\text{adj } A)$.

Q2. If $A = \begin{bmatrix} 1 & 2 & -3 \\ 2 & 0 & -3 \\ 1 & 2 & 0 \end{bmatrix}$, then find A^{-1} and hence solve the following system of equations;   (CBSE 2024)

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

Q3. If $A = \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$, then verify that $A \cdot \text{adj } A = |A| I$.

Also find A^{-1}.

Q4. If $A = \begin{bmatrix} 5 & 0 & 4 \\ 2 & 3 & 2 \\ 1 & 2 & 1 \end{bmatrix}$ and $B^{-1} = \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$, find $(AB)^{-1}$.

Also, find $|(AB)^{-1}|$.   (CBSE 2024)

Q5. Solve the following system of equations by matrix method:

$$x + y + z = 6, y + 3z = 11, x + z = 2y \quad \text{(NCERT EXERCISE}$$

Q6. If $A = \begin{bmatrix} 1 & -1 & 0 \\ 2 & 3 & 4 \\ 0 & 1 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 2 & -4 \\ -4 & 2 & -4 \\ 2 & -1 & 5 \end{bmatrix}$ are two square matrices, find AB and hence solve the system of linear equations

$$x - y = 3, 2x + 3y + 4z = 17 \text{ and } y + 2z = 7.$$

(NCERT EXEMPLAR; CBSE 2017)

Q7. Find the product of the matrices $\begin{bmatrix} 1 & 2 & -3 \\ 2 & 3 & 2 \\ 3 & -3 & -4 \end{bmatrix}$ $\begin{bmatrix} -6 & 17 & 13 \\ 14 & 5 & -8 \\ -15 & 9 & -1 \end{bmatrix}$ and hence solve the system of linear equations: (CBSE 2024)

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

Q8. If $A = \begin{bmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 1 & -2 \end{bmatrix}$, find A^{-1}.

Using A^{-1}, solve the following system of equations:

$$2x - 3y + 5z = 11, 3x + 2y - 4z = -5, x + y - 2z = -3.$$

(CBSE 2020, 19, 18, 17; CBSE SQP 2022-23)

Q9. If $A = \begin{bmatrix} 2 & 1 & -3 \\ 3 & 2 & 1 \\ 1 & 2 & -1 \end{bmatrix}$, find A^{-1} and hence solve the following system of equations: (CBSE 2024)

$$2x + y - 3z = 13$$
$$3x + 2y + z = 4$$
$$x + 2y - z = 8$$

Q10. Solve the following system of equations, using matrices:

$$\frac{2}{x} + \frac{3}{y} + \frac{10}{z} = 4, \frac{4}{x} - \frac{6}{y} + \frac{5}{z} = 1, \frac{6}{x} + \frac{9}{y} - \frac{20}{z} = 2$$

where $x, y, z \neq 0$ (CBSE SQP 2023-24, CBSE 2024)