ग्रीष्मावकाश गृहकार्य - 2026

कक्षा - बारहवीं

विषय - हिन्दी

प्रश्न 1- पतंग कविता पढ़ते हुए तुलसीदास, जायसी, मतिराम, मैथिली शरण गुप्त इत्यादि कवियों का शरद ऋतु वर्णन का संग्रह कर अपनी उत्तर पुस्तिका में लिखें।

2- दो कन्या रत्न पैदा करने पर भक्तिन पुत्र की इच्छा में अंधी अपनी जिठानियों की घृणा एवं उपेक्षा की पात्र बनी रही। इस प्रकार के उदाहरण समाज में आज भी देखने को मिलते हैं। इसका कारण और समाधान अपनी उत्तर पुस्तिका में लिखें।

3- भगत जी बाज़ार को सार्थक और समाज को शांत कैसे कर रहे हैं। पाठ के आधार पर लिखिए।

MK DAV PUBLIC SCHOOL, DALTONGANJ

HOLIDAY HOMEWORK 2026-27

Mathematics, Class XII

Chapter: Matrices and Determinants

1. Construct a matrix $A=\left[a_{ij}\right]_{2\times 2}$ whose elements a_{ij} are given by

   a) $a_{ij}=e^{2ix}\sin jx$. b) $a_{ij}=\dfrac{(i-2j)^2}{2}$ c) $a_{ij}=\left|-2i+3j\right|$

2. Show that a matrix which is both symmetric and skew symmetric is a zero matrix.

3. If $X=\begin{bmatrix}3 & 1 & -1\\ 5 & -2 & -3\end{bmatrix}$ and $Y=\begin{bmatrix}2 & 1 & -1\\ 7 & 2 & 4\end{bmatrix}$, find a matrix Z such that $X+Y+Z$ is a zero matrix.

4. Find values of a and b if $A=B$ where $A=\begin{bmatrix}a+4 & 3b\\ 8 & -6\end{bmatrix}$ and $B=\begin{bmatrix}2a+2 & b^2+2\\ 8 & b^2-5b\end{bmatrix}$.

5. Find the value of x if $\begin{bmatrix}1 & x & 1\end{bmatrix}\begin{bmatrix}1 & 3 & 2\\ 2 & 5 & 1\\ 15 & 3 & 2\end{bmatrix}\begin{bmatrix}1\\ 2\\ x\end{bmatrix}=O$

6. If $A=\begin{bmatrix}1 & 3 & 2\\ 2 & 0 & -1\\ 1 & 2 & 3\end{bmatrix}$, then show that A satisfies the equation $A^3-4A^2-3A+11I=O$.

7. Let $A=\begin{bmatrix}2 & 3\\ -1 & 2\end{bmatrix}$, then show that $A^2-4A+7I=O$. Using this result calculate A^5 also.

8. If $A=\begin{bmatrix}3 & -5\\ -4 & 2\end{bmatrix}$, then find $A^2-5A-14I$. Hence obtain A^3.

9. If the matrix $\begin{bmatrix}0 & a & 3\\ 2 & b & -1\\ c & 1 & 0\end{bmatrix}$ is a skew symmetric matrix, find the values of a, b and c.

10. If $P(x)=\begin{bmatrix}\cos x & \sin x\\ -\sin x & \cos x\end{bmatrix}$, then show that $P(x).P(y)=P(x+y)=P(y).P(x)$.

11. If $A=\begin{bmatrix}\cos\alpha & \sin\alpha\\ -\sin\alpha & \cos\alpha\end{bmatrix}$ and $A^{-1}=A'$, find the value of α.

12. Find the matrix A satisfying the following equations:

    a) $\begin{bmatrix}2 & 1\\ 3 & 2\end{bmatrix}A\begin{bmatrix}-3 & 2\\ 5 & -3\end{bmatrix}=\begin{bmatrix}1 & 0\\ 0 & 1\end{bmatrix}$

    b) $\begin{bmatrix}4\\ 1\\ 3\end{bmatrix}A=\begin{bmatrix}-4 & 8 & 4\\ -1 & 2 & 1\\ -3 & 6 & 3\end{bmatrix}$

    c) $\begin{bmatrix}2 & -1\\ 1 & 0\\ -3 & 4\end{bmatrix}A=\begin{bmatrix}-1 & -8 & -10\\ 1 & -2 & -5\\ 9 & 22 & 15\end{bmatrix}$

13. If $A=\begin{bmatrix}\cos\theta & \sin\theta\\ -\sin\theta & \cos\theta\end{bmatrix}$, then show that $A^2=\begin{bmatrix}\cos 2\theta & \sin 2\theta\\ -\sin 2\theta & \cos 2\theta\end{bmatrix}$

14. If $A=\begin{bmatrix}1 & 5\\ 7 & 12\end{bmatrix}$ and $B=\begin{bmatrix}9 & 1\\ 7 & 8\end{bmatrix}$, find a matrix C such that $3A+5B+2C$ is a null matrix

15. Show that A'A and AA' are both symmetric matrices for any matrix A.

16. Express the following matrices as sum of a symmetric and skew-symmetric matrices

a) $\begin{bmatrix}2 & 3 & 1\\ 1 & -1 & 2\\ 4 & 1 & 2\end{bmatrix}$ b) $\begin{bmatrix}2 & 4 & -6\\ 7 & 3 & 5\\ 1 & -2 & 4\end{bmatrix}$

17. Give an example of matrices A, B and C such that AB = AC, where A is nonzero matrix, but $B \neq C$.

18. Show by an example that for $A \neq O$, $B \neq O$, $AB = O$.

19. Find inverse of the following matrices, if exists.

a) $\begin{bmatrix}2 & -1 & 3\\ -5 & 3 & 1\\ -3 & 2 & 3\end{bmatrix}$ b) $\begin{bmatrix}2 & 3 & -3\\ -1 & -2 & 2\\ 1 & 1 & -1\end{bmatrix}$ c) $\begin{bmatrix}2 & 0 & -1\\ 5 & 1 & 0\\ 0 & 1 & 3\end{bmatrix}$

20. Evaluate a) $\begin{vmatrix}a+ib & c+id\\ -c+id & a-ib\end{vmatrix}$. b) $\begin{vmatrix}\cos 15^\circ & \sin 15^\circ\\ \sin 75^\circ & \cos 75^\circ\end{vmatrix}$ c) $\begin{bmatrix}1 & -3 & 2\\ 4 & -1 & 2\\ 3 & 5 & 2\end{bmatrix}$ d) $\begin{bmatrix}0 & 2 & 6\\ 1 & 5 & 0\\ 3 & 7 & 1\end{bmatrix}$

21. Find x if $\begin{vmatrix}3 & x\\ x & 1\end{vmatrix}=\begin{vmatrix}3 & 2\\ 4 & 1\end{vmatrix}$

22. Find the value of k such that the points are collinear
   a) A(−3, 7), B(7, k) and (2, 1).
   b) A(1, −5), B(−4, 5) and (k, 7).

23. Find the area of the triangle whose vertices are A (11, 7), B (5, 5) and C (-1, 3)

24. Compute A^{-1} for the matrix $A=\begin{bmatrix}0 & 1 & 2\\ 1 & 2 & 3\\ 3 & 1 & 1\end{bmatrix}$

Hence solve the system of equations: $y+2z+8=0$, $x+2y+3z+14=0$, $3x+y+z+8$

25. Find A^{-1} for the matrix $A=\begin{bmatrix}0 & 1 & 1\\ 1 & 0 & 1\\ 1 & 1 & 0\end{bmatrix}$ and show that $A^{-1}=\dfrac{A^2-3I}{2}$

26. Using matrix method solve the following system of equations:

a) $6x-9y-20z=-4$, $4x-15y+10z=-1$, $2x-3y-5z=-1$

b) $2x+y+z=1$, $x-2y-z=\dfrac{3}{2}$, $3y-5z=9$

c) $3x+2y-2z=3$, $x+2y+3z=6$, $2x-y+z=2$

27. If $A=\begin{bmatrix}1 & 2 & 0\\ -2 & -1 & -2\\ 0 & -1 & 1\end{bmatrix}$, find A^{-1}. Using A^{-1} solve the system of equations

$x-2y=10$, $2x-y-z=8$, $-2y+z=7$.

28. 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 sole the system of equations

$x-y+2z=1,\ 2y-3z=1,\ 3x-2y+4z=2$

29. Given $A=\begin{bmatrix}2 & 2 & -4\\ -4 & 2 & -4\\ 2 & -1 & 5\end{bmatrix}$ and $B=\begin{bmatrix}1 & -1 & 0\\ 2 & 3 & 4\\ 0 & 1 & 2\end{bmatrix}$, find BA and use this to solve the system of equations $y+2z=7,\ x-y=3,\ 2x+3y+4z=17$

30. Prove that $(A^{-1})'=(A')^{-1}$, where A is an invertible matrix.

31. Show that the points $(a+5,\ a-4)$, $(a-2,\ a+3)$ and $(a,\ a)$ do not lie on a straight line for any value of a.

32. The sum of three numbers is 6. If we multiply third number by 3 and add second number to it, we get 11. By adding first and third numbers, we get double of the second number. Represent it algebraically and find the numbers using matrix method.

33. If A and B are invertible matrices, then prove that $(AB)^{-1}=B^{-1}A^{-1}$.

34. If $A=\begin{bmatrix}3 & 1\\ 2 & -3\end{bmatrix}$, find $|adj\ A|$ and $|A\ adj\ A|$.

35. If $A=\begin{vmatrix}1 & -2 & 3\\ 0 & -1 & 4\\ -2 & 2 & 1\end{vmatrix}$, find $(A^T)'$. (Ans: $\begin{bmatrix}-9 & -8 & -2\\ 8 & 7 & 2\\ -5 & -4 & -1\end{bmatrix}$)

Chapter: Relations and Functions

36. Let $A=\{1,2,3,.....9\}$ and R be the relation in A × A defined by $(a,b)R(c,d)$ if $a+d=b+c$ for $(a,b),(c,d)\in A\times A$. Prove that R is an equivalence relation and also obtain the equivalence class $[(2,5)]$ and $[(1,3)]$.

37. Show that the relation R on the set Z of all integers defined by $(x,y)\in R\Leftrightarrow(x-y)$ is divisible by 3 is an equivalence relation.

38. Let N be the set of all natural numbers and let R be a relation on N × N, defined by $(a,b)R(c,d)\Leftrightarrow ad=bc$ for all $(a,b),(c,d)\in N\times N$. Show that R is an equivalence relation. Also, find the equivalence class $[(2,6)]$.

39. Let N be the set of all natural numbers and let R be a relation on N × N, defined by $(a,b)R(c,d)\Leftrightarrow ad(b+c)=bc(a+d)$ for all $(a,b),(c,d)\in N\times N$. Show that R is an equivalence relation. Also, find the equivalence class $[(2,6)]$.

40. Let R be the equivalence relation in the set $A=\{0,1,2,3,4,5\}$ given by $R=\{(a,b):2\ divides\ (a-b)\}$. Write the equivalence class $[0]$.

41. Let $A=[-1,1]$. Then discuss whether the following functions defined on A are one-one onto or bijective.

a) $f(x)=\frac{x}{2}$ b) $g(x)=|x|$ c) $h(x)=x|x|$ d) $k(x)=x^2$

42. Check whether following functions are one-one onto or not?

(i) $f(x)=\frac{x}{x^2+1}$, $f:R\to R$ (ii) $f(x)=\cos x$ iii) $f(x)=9x^2+6x-5$, $f:R_+\to[-5,\infty)$

iv) $f(x)=5x^2+6x-9$, $f:R_+\to[-9,\infty)$ (R+ is the set of all non-negative real numbers)

v) $f(x)=4x^2+12x+15$, $f:N\to S$ where S is the range of S

43. Show that $f:N\to N$ given by $f(x)=\begin{cases}x+1, & \text{if } x \text{ is odd}\\ x-1, & \text{if } x \text{ is even}\end{cases}$ is both one-one and onto.

44. Find the number of all one-one functions from set $A=\{a,b,c\}$ to itself.

Chapter: Inverse Trigonometric Functions

45. Find the principal value of $\tan^{-1}\left(\tan\frac{7\pi}{6}\right)$ (Ans: $\frac{\pi}{6}$)

46. Find the principal values of i) $\tan^{-1}\left(\tan\frac{9\pi}{8}\right)$ ii) $\cot^{-1}\left(-\frac{1}{\sqrt{3}}\right)$ iii) $\sec^{-1}\left(\sec\frac{9\pi}{5}\right)$

47. Evaluate: $\sin\left(\cot^{-1}\left(\cot\frac{17\pi}{3}\right)\right)$. (Ans: $\frac{\sqrt{3}}{2}$)

48. Find the domain of the following functions:

a) $\sin x+\sin^{-1}x$ b) $\cos^{-1}(3x-2)$

49. Evaluate: i) $\sin^{-1}(\sin 10)$ ii) $\sin^{-1}(\sin 5)$ iii) $\cos^{-1}(\cos 10)$

50. Find the principal value of $\cot^{-1}\left(-\sqrt{3}\right)+\tan^{-1}(1)+\sec^{-1}\left(\frac{2}{\sqrt{3}}\right)$. (Ans: $\frac{5\pi}{4}$)

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Summer vacation holiday homework

Class: 12

Sub: Economics

1) Why should the aggregate final expenditure of an economy be equal to the aggregate factor payments? Explain.

2) Distinguish between stock and flow. Between net investment and capital which is a stock and which is a flow? Compare net investment and capital with flow of water into a tank.

3) Write down the three identities of calculating the GDP of a country by the three methods. Also briefly explain why each of these should give us the same value of GDP.

4) Write down some of the limitations of using GDP as an index of welfare of a country.

5) What are the important features of a capitalist economy?

6) Describe the four major sectors in an economy according to the macroeconomic point of view.

7) Solve 10 numerical questions of NI accounting from Income method.

8)Solve 10 numerical questions of NI accounting from Value Added method.

9)Solve 10 numerical questions of NI accounting from Expenditure method.

M.K DAV Public School

Holiday Homework (Summer Vacation)

Class: 12

Subject: Business Studies

1. Write meaning and features of management.
2. What are objectives of management?
3. Explain briefly importance of management.
4. *"They are responsible for interpreting the policies formulated by top level management."* Identify the level of management and state its functions.
5. Explain the term 'Coordination' and its importance in management.
6. *"Art is concerned with personal application of knowledge."* In the light of this statement, compare all the features of management with art and prove that management is an art.
7. Why is management not considered a full-fledged profession?
8. Explain the principles of Scientific Management.
9. Explain briefly importance of principles of management.
10. Explain briefly all principles developed by Fayol.
11. Explain briefly techniques of Scientific Management.
12. Differentiate between the contribution of Taylor and Fayol.

M.K.DAV Public School, Daltonganj

Holiday Home Work

Class: 12 Sub: Computer Science

Q1. Define the following functions:

a) isupper()
b) isalpha()
c) islower()
d) evaluate()
e) type()
f) randint()
g) random()

Q2. List the types of Arguments. Also define them.

Q3. Write a Python program to find the sum of first N natural numbers using function.

Q4. Write a function **sumElements(N)** which adds all the elements of list **N** which is passed as parameter.

Q5. Differentiate between **readline()** and **readlines()** function.

Q6. Write a Python program to count the number of vowels present in a text file **"Hello1.txt".**

Q7. Write a Python program to count the number of words present in a text file **"Hello2.txt".**

Q8. Write a Python program to write and read the strings from a text file **"Hello3.txt".**

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HOLIDAY HOMEWORK ASSIGNMENT

Informatics Practices (Code: 065) | Class: XII

Topics: Computer Networks & Societal Impacts **Academic Session: 2026-27**

Part A: Networking Case Study

Scenario: A multi-specialty hospital is setting up a local network across four blocks. Analyze the data provided and answer the design questions.

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Distances: Admin to OPD (50m), OPD to Surgery (150m), Surgery to
Diagnostics (70m), Admin to Diagnostics (120m).
Computer Counts: Admin (30), OPD (100), Surgery (20), Diagnostics
(65).
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Questions:

1. Suggest the most efficient cable layout (topology) and provide a schematic diagram below.
2. In which block should the **Server** be placed for optimum performance? Provide a technical justification.
3. Specify the exact locations for installing a **Switch/Hub** and a **Repeater** in this setup.
4. Which wired communication medium would you suggest for high-speed data transfer between blocks?

Space for Network Layout Diagram

Part B: Societal Impacts & Ethics

Prepare a 5-page report or presentation on **one** of the following themes. Your work must include real-world case studies and legal references.

- **Digital Property Rights:** Compare Plagiarism, Copyright, and Trademark infringement with examples from the Indian software industry.

- **E-Waste Crisis:** Research the environmental impact of discarded hardware and the "Recycle-Refurbish-Reduce" framework.
- **Cyber Laws:** Analyze key sections of the **IT Act 2000** related to Identity Theft and Data Privacy.

Part C: Analytical Theory

Answer the following in your assignment register:

1. Define **Intellectual Property Rights (IPR)**. How do Creative Commons licenses benefit digital creators?
2. Differentiate between **HTTP** and **HTTPS**. Why is the latter mandatory for e-commerce websites?
3. What is **Net Neutrality**? Discuss its importance in the context of a fair and open internet.
4. Compare **Free Software** (FSF definition) with **Open Source Software** (OSI definition).

Part D: Cyber Security Glossary

Explain the difference between the following pairs in exactly two sentences each:

- Phishing vs. Pharming
- Crackers vs. Hackers
- Public Cloud vs. Private Cloud
- Adware vs. Spyware

Instruction: All diagrams must be drawn with a pencil and scale.
Submission Deadline: Opening day of school.

Class XII · Physics

Holiday Homework (2026-27)

1. a) Just outside the surface of a charged conductor, electric field is normal to the surface. Explain.
   b) The net charge in the interior of a conductor is zero and any excess charge resides at its surface.
   c) Electric field at the surface of charged conductor is proportional to surface charge density.

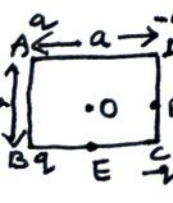
2. a) What is Equipotential surface. Hence explain No Work is done in moving a charge over an Equipotential surface
   b) Equipotential surfaces are closer together in the region of strong $\vec{E}$ and farther apart in the regions of Weak field. Explain.

3. a) Write an expression for the potential energy of two point charges q_1 and q_2 separated by distance(r) in the presence of external Electric field ($\vec{E}$)
   b) Derive an expression for the potential energy of a dipole in a uniform electric field, Hence write the conditions for stable and unstable equilibrium

4. a) Derive an expression for the potential at a point due to continuous charge distribution. Hence write formula for the potential due to a general source
   b) Find electric potential due to a uniformly charged spherical shell at a point a) $r > R$ b) $r = R$ and c) $r < R$. Plot variation of potential with distance(r) from its centre.

5. a) pg. NO · 2.7 Two small conducting balls A and B of radius r_1 and r_2 have charges q_1 and q_2 respectively. They are connected by a wire. Obtain expression for charges on A and B in equilibrium —
   b) Two charges 3×10^{-8} C and -2×10^{-8} C are located 15 cm apart. At what point on the line joining the two charges is the electric potential is zero

6. a) Four charges $+q, +q, -q, -q$ are placed respectively at the corners A, B, C and D of a square of side 'a' arranged as shown in given order. Calculate the electric potential at the centre O. If E and F are the mid points of sides BC and CD respectively. What will be the work done in carrying a charge 'e' from O to E and from O to F.

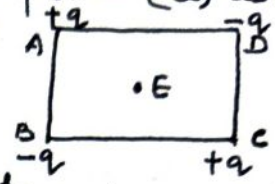


   b) Draw equipotential surfaces → 1) of two equal and opposite point charges 2) of a single true point charge 3) of two equal positive charges 4) of uniform electric field for

7. a) Two point charges $+Q_1$ and $-Q_2$ are placed 'r' distance apart. Obtain the formula for the amount of work done to place third charge Q_3 at the midpoint of the line joining the two charges
   b) At what distance from charge $+Q_1$ on the line joining the two charges will the Work done be zero?

8. a) Two particles have equal masses of 5.0 g each and opposite charges of $+4\times10^{-5}$ C and -4×10^{-5} C they are released from rest with a separation of 1.0 m between them find the speed of the particles when separation is reduced to 50 cm.

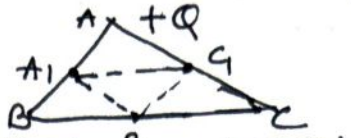
b) NCERT. CBSE F.15 · Pg NO. 2.21 Example 27 Four charges are arranged at the corners of a square ABCD of side (a) as shown in fig



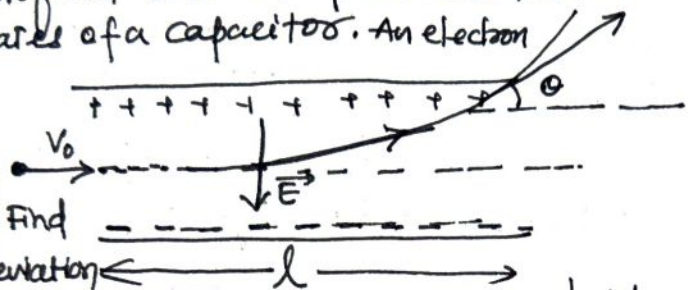
i a) Find work done required to put together this arrangement

ii) A charge q_0 is brought to the centre E of the square. How much extra work is needed to do this?

9) Example 28 CBSE F.23. Three point charges +Q, +2Q and -3Q are placed at the vertices of an equilateral ΔABC of side l. If these charges are displaced to the Midpoints A_1, B_1 and C_1 respectively. Find the work done in shifting the charges.



10] a) An electric field E is set up between the two parallel plates of a capacitor. An electron enters the field symmetrically between the plates with a speed V_0. Find the angle of deviation of the path of the electron as it comes out of the field.



b) Two large thin metal plates are parallel and close to each other. On their inner faces, the plates have surface charge densities of opposite charges and magnitude 17.0×10^{-22} C/m^2 what is E (i) to the left of the plates, (ii) to the right of the plates and iii) to the Middle or in between the plates.?

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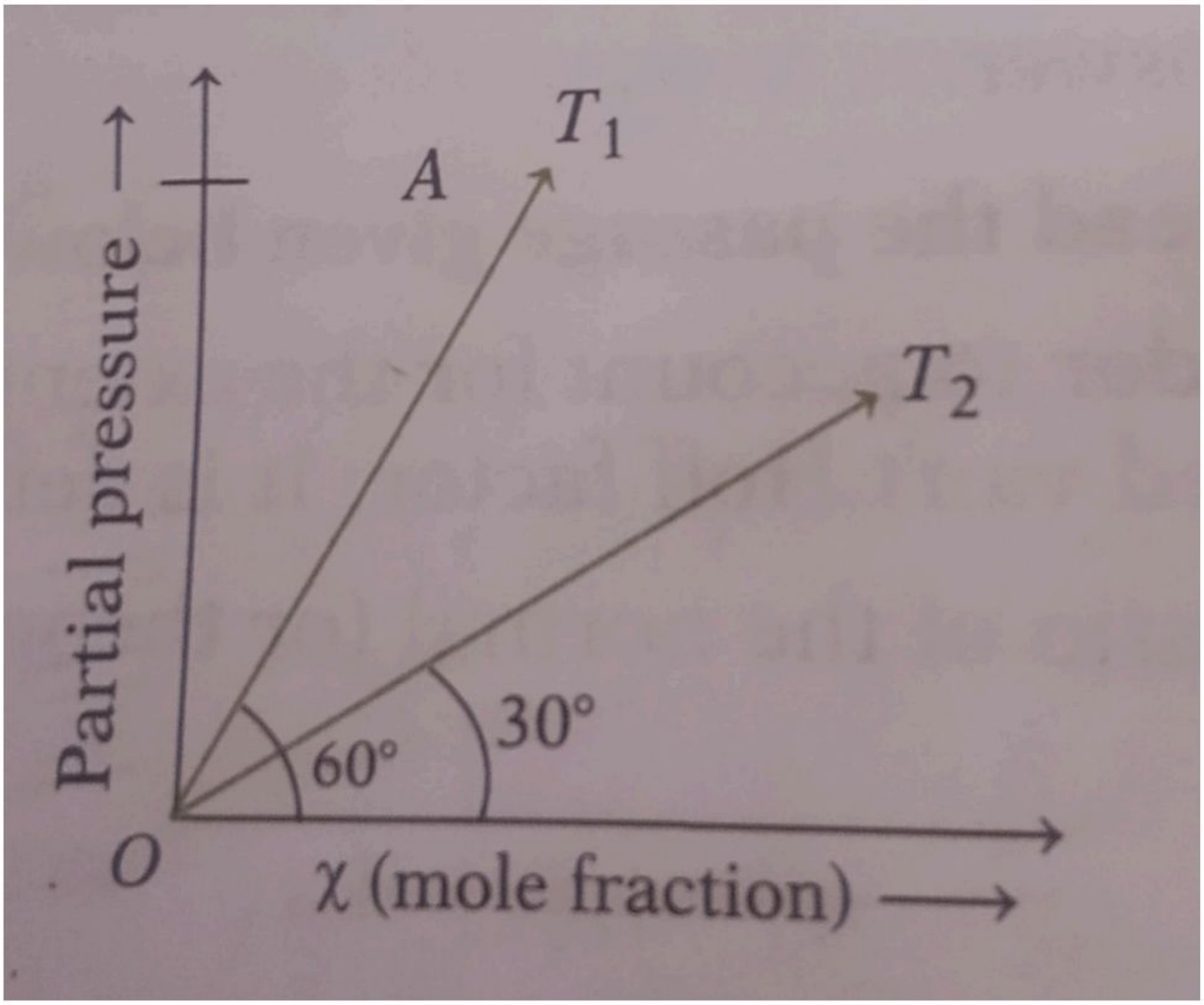
Nabeem.
Physics Dept.

HOLIDAY HOMEWORK

SUBJECT-CHEMISTRY

Q1.. Aquatic animals feel more comfortable in cold water than warm water as the solubility of oxygen in cold water is more than that in warm water.The graph below shows the solubility of oxygen in the water as a function of pressure at different temperatures T_1 and T_2.



I) Based on the above graph ,what is the ratio of K_H at T_1 and T_2.

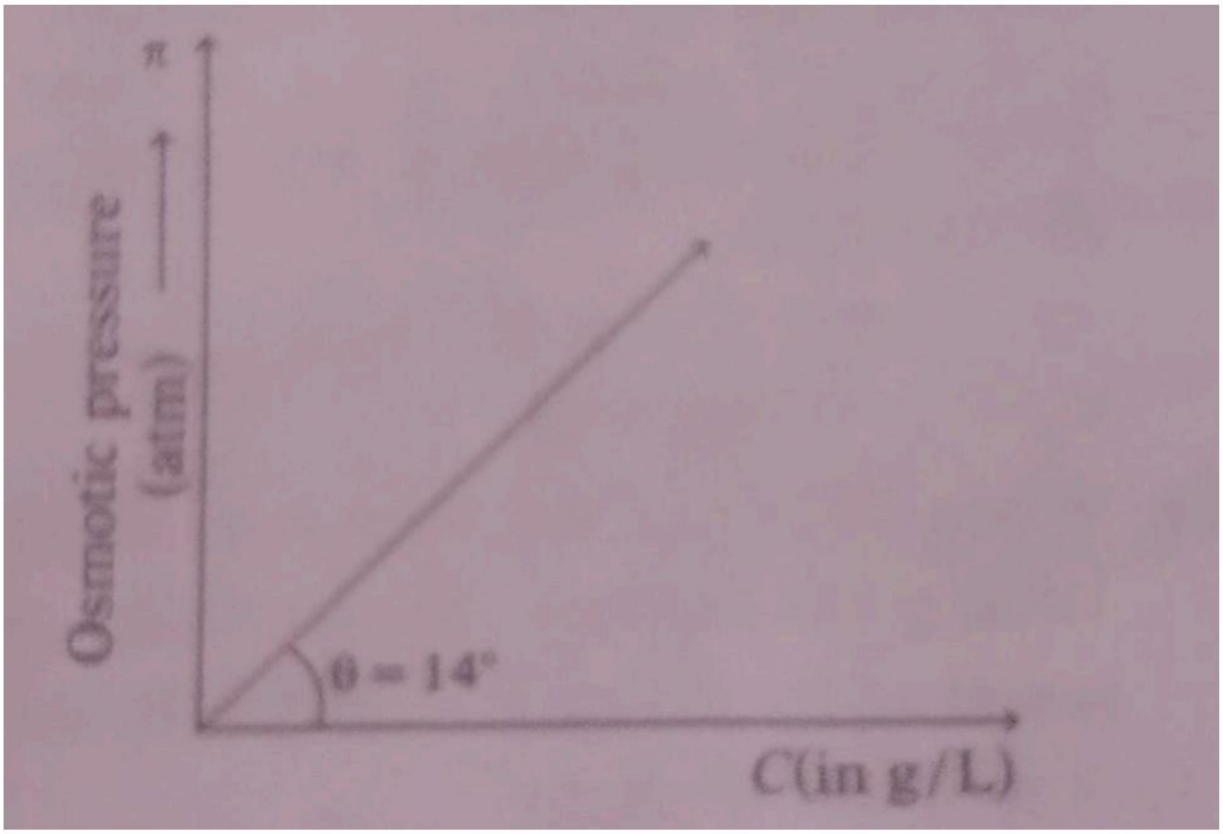
II) Between T_1 and T_2 which one is greater.

Q2. Give reason for the following -

I) Measurement of osmotic pressure method is preferred for determination of molar masses of macro molecules such as proteins and polymer.

II)Elevation in boiling point of 1M KCl solution is nearly double than that of 1M sugar solution.

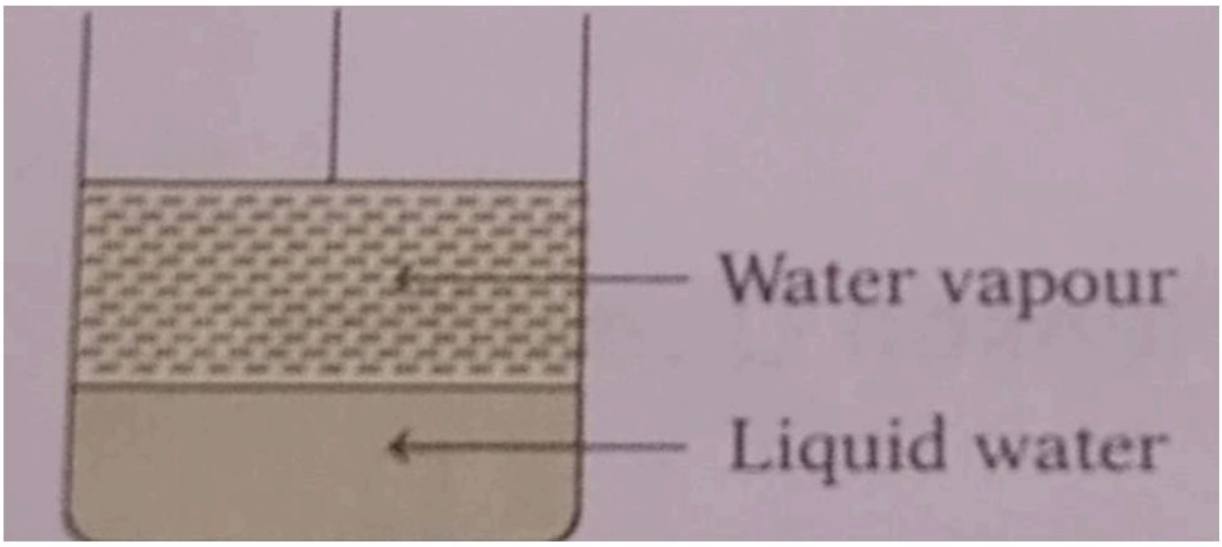
Q3. Use the graph given below (π vs Conc) of the compound X to answer the following.



I) Identify the molecular weight of X.
II) What will happen to the molecular weight of the same (X) if the temperature is increased and why?
(Use R=8.31,T=300K,tan 14°=249.3×10_{-3})

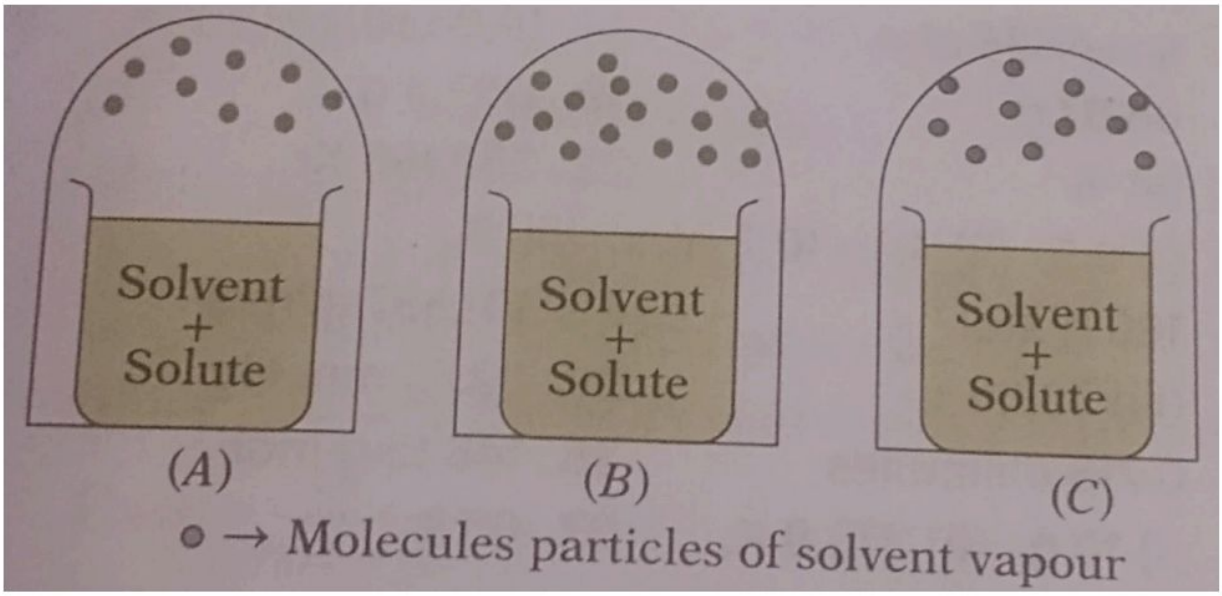
Q4. Aqueous solution of NaNO3(0.85%w/w) is apparently 90% dissociated at 27°C .Calculate osmotic pressure.

Q5..Water vapour and liquid water are in equilibrium in the image shown below. At room temperature, the vapour pressure of water is 25 mmHg. The volume of water vapour is V.



What will be the vapour pressure of the water if the volume of water vapour becomes:
(i) 2V when the piston is moved upwards
(ii) V/2 when the piston is moved downwards
(iii) Explain the reasons for your answers for (i) and (ii).

Q6.The images below show the evaporation of the solvent on account of the presence of non-volatile solutes.
In each of the three cases, the solvent taken is of the same type. The solvent is volatile and its quantity is the same in all three cases.



(○ → Molecules/particles of solvent vapour)

Which of the above three solutions has the least amount of solute in it? How did you reach that conclusion?

Q7.A solution containing 2 g of glucose
(M=180 g/mol) in 100 g of water is prepared at 303 K.
If the vapour pressure of pure water at 303 K is 32.8 mm Hg, what would be the vapour pressure of the solution?

Q8.On mixing liquid X and liquid Y, volume of the resulting solution decreases.
What type of deviation from Raoult's law is shown by the resulting solution?
What change in temperature would you observe after mixing liquids X and Y?

Q9..(i) Gas (A) is more soluble in water than gas (B) at the same temperature. Which one of the two gases will have the higher value of K_H (Henry's law constant) and why?
(ii) In a non-ideal solution, what type of deviation shows the formation of maximum boiling azeotropes?

Q10.
(i) A non-volatile solute 'X' (MM=50 gm/mol) when dissolved in 78 g of benzene reduced its vapour pressure to 80%.
Calculate the mass of X dissolved in the solution.
(ii) Calculate the boiling point elevation for a solution prepared by adding 10 g of $MgCl_2$ to 200 g of water assuming $MgCl_2$ is completely dissociated.
Given:
Kb for water = 0.512 Kkg mol-1
Molar mass of $MgCl_2$=95 gm/mol)

ELECTROCHEMISTRY

Q1. Give reason-
I) Electrolysis of the KBr solution gives Br2 ions at anode ,but the solution of KF does not produce any F2 molecule.

II)Rusting of iron is quicker in saline water than in ordinary water.

III) Why on dilution the molar conductivity of CH3COOH increases drastically while that of CH3COONa increases gradually?

Q2. The molar conductance of an electrolyte reaches to the maximum value at infinite dilution?Give reason.

Q3.
Write the Nernst equation and calculate emf of the following cell at 298K
Cr |Cr+3(0.1M)||Fe+2(0.01)|Fe
Given-

E°cell=0.3V

Q4. Calculate E°cell and ∆°G for the following reaction at 25°C

$A^{2+}(aq) + B^{+}(aq) \text{ ----> } A^{3+}(aq) + B(s)$

Given $Kc=10^{10}$,1F=96500C

Q5. Write questions of JEE mains and NEET(2025 and 2026) based on Chapter-Solution and Electrochemistry.

Try to solve these questions.

SUMMER HOLIDAY HOMEWORK

Std. XII

Q.1 Choose the correct option

I. The French districts of Alsace and Lorraine had been taken by -

a) Germany b) Prussia

c) Holland d) China

II. 'What a thunderclap these words were to me!' This indicates that the words were -

a) loud and clear b) startling and unexpected

c) pleasant

III. The poetic device used in 'trees sprinting' in My Mother At Sixty-six is -

a) metaphor b) simile

c) personification d) allusion

IV. The Third Level provides a clear example of -

a) time travel b) time and space

c) a medium of escape

Q.2 Answer the following questions in about (30-40 words)

1. What did Franz notice that was unusual about the school that day?
2. What made M. Hamel cry towards the end of his last lesson?
3. Why is the order from Berlin called a 'thunderclap' by Franz?
4. Discuss the irony at the end of the chapter 'The Third Level'.
5. How does the narrator describe Galesburg, Illinois?

Q.3 Answer the following questions (80 words)

1. Describe the third level as a science fantasy.
2. Throw light on various images described in the poem 'My Mother at Sixty-Six'.
3. Justify the title 'The Last Lesson'.

Q.4 Writing Section (120-150 words)

You have realized the necessity of education for their family, society and in turn for the nation. Write a letter to the Editor, 'The National Times', highlighting the importance of 'education of women'. You are Tarun, B/7, Mall Road, New Delhi.

MKDAV PUBLIC SCHOOL

Holiday Homework (Session 2026-27)

Subject: Biology | Class: XII

Dear Students, summer holidays are a time for rejuvenation and exploration. This assignment is designed to help you delve deeper into the fascinating world of Genetics and Human Reproduction. Ensure your work is neat, original, and scientifically accurate.

Section A: Principles of Inheritance and Variation

1. The Geneticist's Portfolio (Pedigree Analysis)

Choose one Mendelian trait (e.g., widow's peak, attached earlobes, or color blindness) and trace it through three generations of a hypothetical family.

- Construct a pedigree chart using standard symbols.
- Write the possible genotypes for each family member.
- Calculate the probability percentage of the trait appearing in the fourth generation.

2. Comparative Study: Non-Mendelian Inheritance

Create a detailed infographic or comparison table between **Incomplete Dominance** and **Co-dominance**.

- Use ***Mirabilis jalapa*** for Incomplete Dominance.
- Use **ABO Blood Grouping** for Co-dominance.
- Include Punnett squares to illustrate the phenotypic and genotypic ratios.

3. Clinical Focus: Chromosomal Disorders

Prepare a one-page fact sheet for a medical awareness camp regarding the following syndromes:

- **Down's Syndrome:** Trisomy of 21.
- **Klinefelter's Syndrome:** $44 + XXY$.
- **Turner's Syndrome:** $44 + XO$.

Include causes (aneuploidy/non-disjunction) and key clinical features for each.

Section B: Human Reproduction

4. Hormonal Roadmap (Flowchart)

Illustrate the hormonal interplay during the menstrual cycle. Your flowchart must show the connections between:

- **Hypothalamic Hormones:** GnRH.
- **Pituitary Hormones:** LH and FSH.
- **Ovarian Hormones:** Estrogen and Progesterone.
- Correlate these with the specific phases: Menstrual, Follicular, Ovulatory, and Luteal.

5. Gametogenesis Analysis

Differentiate between **Spermatogenesis** and **Oogenesis** based on the following parameters:

- Meiotic completion (Does it complete before or after fertilization?).
- Polar body formation.
- Periodicity (Continuous vs. Cyclic).
- Nature of gametes produced (Motility and size).

6. Research Brief: Assisted Reproductive Technology (ART)

Write a 300-word report on modern medical interventions for infertility. Specifically explain the protocols for **ZIFT**, **GIFT**, and **ICSI**. Discuss the ethical considerations briefly.

Section C: Skill Enhancement

7. Biological Modeling

Develop a 3D model (using biodegradable materials like clay, cardboard, or paper-mâché) of one of the following:

- The sectional view of a **Human Seminiferous Tubule**.
- The structure of a **Human Sperm** (labeled with Acrosome, Nucleus, Mitochondria, and Tail).

Submission Deadline: First day of school reopening.

"The science of today is the technology of tomorrow."