DELHI PUBLIC SCHOOL VISAKHAPATNAM
ASSIGNMENT
October- November 2025-26

Class: XI (Science) **Date of Submission: on or before 8.12.2025**

Subject: ENGLISH

1. Rewrite the sentences as directed:
   a. The teacher said, "Finish the work now." (Change to indirect)
   b. Hardly had the bell rung when the class started. (Rewrite using *no sooner*)
   c. He is too tired to walk. (Rewrite using *so…that*)
   d. The news surprised everyone. (Change to passive voice)
   e. "Please help me carry this bag," she said to him. (Change to indirect request)
2. As the Sports Captain of Sunrise International School, Bengaluru, draft a notice informing students about an Inter-House Sports Meet to be held on your school grounds. (50 words)
3. You are the Director of the National Disaster Management Authority (NDMA). After the recent sudden floods in North India (2025), your department needs to alert people about disaster preparedness and emergency safety steps. Design a poster to be distributed in flood-prone districts. (50 words)
4. Some people believe that the rapid introduction of AI-powered smart classrooms in Andhra Pradesh's government schools (2025) will greatly improve learning outcomes. Others argue that relying too much on AI may reduce teachers' roles and negatively affect students' critical thinking. Which viewpoint do you support? Write a debate for or against the motion to be presented in the school assembly, in about 120–150 words.
5. Rearrange the jumbled words to make meaningful sentences.
(a) climate change/for action/is urgent/the need/now more than ever
(b) discovered/the scientists/new species/several/in the rainforest
(c) the students/annual cultural fest/enthusiastically/for the/prepared
(d) improve/regular exercise/can significantly/your mental health
6. Recently, several cases of deepfake videos causing misinformation and cyberbullying have been reported across India. Students must stay alert and informed. You are Sana/Sahil. Deliver a speech in 120–150 words on "Deepfake Awareness: A New Digital Threat for Students."

Subject: MATHEMATICS

1. Three vertices of a parallelogram, taken in order, are (- 1, - 6), (2, - 5) and (7, 2). Write the coordinates of its fourth vertex.
2. Find the slope and the equation of the line passing through the points (5, 3) and (- 5, - 3).
3. The slope of a line is double of the slope of another line. If tangent of the angle between them is $\tan\theta = \frac{1}{3}$, find the slopes of the lines.
4. Find the coordinates of the focus and the vertex, the equation of the directrix and the axis, and length of the latus rectum of the parabola: $x^2 = 10y$
5. If the parabola $y^2 = 4ax$ passes through the point (3, 2), then find the length of its latusrectum.
6. If the vertex of the parabola is the point (- 3, 0) and the directrix is the line x + 5 = 0, then find its equation.
7. Write co - ordinates of foot of perpendicular from (3, 7, 9) on x - axis, y - axis, z - axis.
8. Find the coordinates of a point equidistant from the four points O (0, 0, 0), A (a, 0, 0), B (0, b, 0) and C (0, 0, c).
9. Verify that (0, 7, 10), (- 1, 6, 6) and (- 4, 9, 6) are the vertices of a right - angled triangle.

Subject: PHYSICS

1. The triple points of neon and carbon dioxide are 24.57 K and 216.55 K respectively. Express these temperatures on the Celsius and Fahrenheit scales

2. A hole is drilled in a copper sheet. The diameter of the hole is 4.24 cm at 27^0C. What is the change in the diameter of the hole when the sheet is heated to 227^0C? Coefficient of linear expansion of copper 1.70 X 10^{-5}/C
3. A Brass wire 1.8 m long at 27^0C is held taut with little tension between two rigid supports. If the wire is cooled to a temperature of-39^0C, what is the tension developed in the wire, if its diameter is 2.0 mm? coefficient of linear expansion of brass = 2.0 X 10^{-5}/C, Young's modulus of brass 0.91 X 10^{11}Pa
4. The coefficient of volume expansion of glycerine is 49 X 10^{-5}/C. what is the fractional change in its density for a 30^0C rise in temperature?
5. A 'thermocole' cubical icebox of side 30 cm has a thickness of 5.0 cm. if 4.0 kg of ice are kept in the box, estimate the amount of ice remaining after 6 h. The outside temperature is 45^0C and coefficient of thermal conductivity of thermocolenis 0.01 $Js^{-1}m^{-1}C^{-1}$. Given heat of fusion of water 335 X 10^3J/kg.

Subject: CHEMISTRY

Ch-6 Equilibrium

1. For the equilibrium $H_2+Cl_2 \Leftrightarrow 2HCl$ at 273 K , initially 0.25M H_2 and 0.25M Cl_2 are introduced into a reaction vessel and the system is allowed to attain equilibrium. At equilibrium the concentrations of hydrogen and chlorine became 0.0314M. Calculate K_c and K_p. [Ans 195]
2. 3.2 moles of HI were taken in a sealed bulb at 440^0C till the equilibrium state was reached. Its degree of dissociation was found to be 20%. Calculate the number of moles of HI, H_2 and I_2 present at equilibrium point and also determine the equilibrium constant.
3. What will be the value of G and standard G^- for the reaction $A+B \Leftrightarrow C+D$ at 27^0C for which K=100. Predict the extent of reaction. [G-=-11.49kJ/mol]
4. In a system compressing of A,B,C $A \Leftrightarrow 2B+3C$ If concentration of C is increased by factor of 2, what will be the equilibrium concentration of B wrt its original value? [½* sq root 2 times]
5. If $K_w=49x10^{-14}$, what will be neutral pH of H_2O? [log 7=-0.8451] [6.1549]
6. Calculate pH when 9.8g of sulphuric acid is dissolved in 2L solution. [1]
7. The ionic product of water K_w is $2.93x10^{-15}mol^2dm^{-6}$ at 10^0C. i) What is the correct expression for K_w? Calculate pH of pure water at 10^0C. ii) Suggest why this pure water at 10^0 C is not alkaline. [log 5.41=0.73, log 10^{-8}=-8] [pH=7.27]
8. I)Define solubility product. Write solubility product expression in terms of molar solubility for $FeCl_3$.
ii) What is the effect of temperature on solubility of gases in liquids?
iii) Equilibrium constant for the reaction is 4. What will be the equilibrium constant for the reverse reaction?
iv) Calculate the pH of 10^{-8} M HCl solution. [log 1.1=0.0454, log 10^{-7}=-7] [pH=6.9546]
9. An aq solution contains an unknown concentration of Ba^{2+} ions. When 50ml of 1M solution of Na_2SO_4 is added, $BaSO_4$ first begin to precipitate. The final volume is 500 ml. The solubility product of barium sulphate is 10^{-10}. What is original concentration of barium ions?
[$2x10^{-9}$mol/L]
10. Calculate pH of a solution formed by mixing equal volumes of two solutions A and B of a strong acid having pH=6 and pH=4 respectively. [log5.05=0.7033] [Ans 4.2967]

Ch- 6 Redox Reactions

1. Balance $P+HNO_3 \rightarrow H_3PO_4+NO_2+H_2O$ by oxidation number method.
2. Find the oxidation number of C in CH_3OH, CH_2O, HCOOH,C_2H_2.
3. Explain why i) Reaction of $FeSo_4+Cu \rightarrow CuSO_4+Fe$ does not occur.
   ii) Zinc can displace Cu from aq $CuSO_4$ solution but Ag cannot.
   iii) Solution of silver nitrate turns blue when copper rod is dipped in it.
4. Balance $Zn+NO_3^- \rightarrow Zn^{2+}+NH_4^++H^+$ (acidic medium)
5. MnO_4^{2-} undergoes disproportionation reaction in acidic medium but MnO_4^- does not, give reason.
6. Permanganate ions react with bromide ion in basic medium to give manganese dioxide and bromate ion. Write the balanced chemical equation for the reaction.
7. The standard electrode potential of two metals A and B are -0.76V and +0.34V. If and electrochemical cell is formed using these metals, identify cathode and anode. Write the direction of flow of electrons.
8. Define the term redox couple. Write the practical applications of redox couple.
9. Write the preparation and functions of a salt bridge.

Subject: BIOLOGY

1. The acid soluble compounds include amino acids, nucleosides, small sugars etc. When one adds a phosphate group to a nucleoside one gets another acid soluble biomolecule called
   (a) Nitrogen base
   (b) Adenine
   (c) Sugar phosphate
   (d) Nucleotide
2. Which range of wavelength (in nm) is called photosynthetically active radiation (PAR)?
   (a) 100-390 (b) 390-430 (c) 400-700 (d) 760-10000
3. The enzyme that is not found in a C_3 plant is
   (a) RuBP Carboxylase (b) PEP Carboxylase
   (c) NADP reductase (d) ATP synthase
4. How are prosthetic groups different from co-factors?
5. Starch, Cellulose, Glycogen, Chitin are polysaccharides found among the following. Choose the one appropriate and write against each.
   a) Cotton fibre _____ b)Exoskeleton of Cockroach _____
   c) Liver _____ d) Peeled potato _____
6. Chlorophyll a is the primary pigment for light reaction. What are accessory pigments? What is their role in photosynthesis?
7. Find out how Melvin Calvin worked out the complete biosynthetic pathway for synthesis of sugar.
8. Where does ETC found in eukaryotic cell?
9. Name the first product formed in Kerb's cycle.
10. Oxygen is an essential requirement for aerobic respiration but it enters the respiratory process at the end? Discuss.
11. What is the role of carbonic anhydrase in RBCs??
12. Give the role of intercostals muscles in respiration.
13. Name the organs of respiration in the following organisms.
a) Flatworms b) Birds c) Frog d) Cockroach
14. What is the difference between total lung capacity and vital capacity?

Subject: ARTIFICIAL INTELLIGENCE

1. Discuss briefly about Lexical Analysis.
2. Differentiate between Syntactical and Semantic Analysis.
3. What do you understand by Pragmatic Analysis?
4. Discuss about Opacity or Blackbox effect of AI systems.
5. What is Singularity in AI?

Subject: PHYSICAL EDUCATION

1. What is sports training? Explain macro, meso, microcycle in sports training.

2. What is doping? And Explain about stimulants, narcotics, diuretics, beta blockers, blood doping, steroids.