Subject: ENGLISH

1. Answer the following.
a) What dilemma did Dr. Andrew Manson face during Susan Morgan's delivery, and how did he resolve it?
b) How did Dr. Andrew's experience with the Morgans' case change his perspective on his profession?
c) Describe the harsh conditions the travelers faced on the Tibetan plateau.
d) What cultural insights does Nick Middleton provide about Tibet in The Silk Road?
e) What does the father feel about the growing distance between him and his son in the poem?
f) How does the poem Father to Son reflect the theme of communication and reconciliation?

2. Notice Writing: As the Head of the Cultural Committee, write a notice informing students about an inter-school debate competition to be held in your school. (50-60 words)

3. Article Writing: Write an article for your school magazine on the topic The Importance of Mental Health for Students. (150-200 words) – Practice question.

*Note these details about article writing in you English class work.

Article writing-

Purpose of writing an article?

To present information on a variety of themes -
  ➢ expressing views on some <u>issue of social interest.</u>
  ➢ expressing arguments in favour of or against a stated <u>hypothesis or event.</u>

Types
  ❖ Magazine general and school - limited audience
  ❖ Newspaper - wider audience

Marking Scheme: Format -1 Mark ,Content-2 Marks, Expression-2 Marks (Total -5 Marks)

Word Limit – around 200 words

Time: 20 to 22 minutes (Planning 3/4 minutes)

Format

Heading in More Than One Word

Byline

Introduction (1st Para) - limited words, short paragraph

2nd/3rd paragraph - (Develop Cause - effect relationship)

4th paragraph (comparison and contrast)

5th Para (Conclusion / Solution / Observation)

<u>Points to remember</u>
  ➢ Don't attempt to write about every single piece of information select relevant information.
  ➢ Must be written in the appropriate format and style
  ➢ Prefer to write in 3rd Person.

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 two thigh bones(femurs), each of cross-sectional area 10 cm^2 support the upper part of a human body of mass 40 kg. Estimate the average pressure sustained by the femurs. Take g = 10 m/s^2
2. In a car lift compressed air exerts a force F_1 on a small piston having a radius of 5 cm. This pressure is transmitted to a second piston of radius 15 cm. If the mass of the car to be lifted is 1350 kg. What is F_1 ? What is the pressure necessary to accomplish this task? Take.
g = 9.8 m/s^{-2}
3. Two syringes of different cross - sections (with out needles) filled with water are connected with a tightly fitted rubber tube filled water. Diameters of the smaller piston and larger piston are 1.0 cm and 3.0 cm respectively. a) find the force exerted on the larger piston when a force of 10 N is applied to the smaller piston. (b) If the smaller piston is pushed in through 6.0 cm, how much does the larger piston move out?
4. A faulty thermometer has its fixed points marked as 5^0 and 95^0 . Temperature of a body as measured by the faulty thermometer is 59^0 . Find the correct temperature of the body on celsius scale.
5. (a)At what temperature, do the reading of Celcius and Fahrenheit scales coincide?
   (b) At what temperature is the Fahrenheit scale reading equal to twice of celsius scale reading?
6. Show that the coefficient of area expansion ($\Delta A/A$) / ΔT of a rectangular sheet of the solid is twice it's linear expansion
7. How many grams of ice at -14^0 C are needed to cool 200 gram of water from 25^0 C to 10^0 C ?
   Take specific heat of ice = 0.5 cal / g/ C and latent heat of ice = 80 cal /g
8. Estimate the rate at which ice would melt in a wooden box 2.0cm thick and of inside measurements 200 cm x 120 cm x 120 cm assuming that the external temperature is 30 ^{0} C and coefficient of thermal conductivity of wood is 0.0004 cal ^{0}C / s cm
9. Two bodies A and B are kept in evacuated vessels maintained at a temperature of 27^0 C. The temperature of A is 527^0 C and that of B is 127^0 C. Compare the rates at which heat is lost from A to B.
10. Two rods, one of aluminium and the other made of steel, having initial lengths l_1 and l_2 are connected together to form a single rod of length l_1 + l_2 . The coefficients of linear expansion for aluminium and steel are a_a and a_s respectively. If the length of each rod increases by the same amount when their temperature are raised by t^0 C , then find the ratio $l_1/(l_1 + l_2$).

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^{0}C 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.
4. What will be the value of G and standard G$^-$ for the reaction A+B$\Leftrightarrow$ C+D at 27^{0}C for which K=100. Predict the extent of reaction.   [G-=-11.49kJ/mol]
5. 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]
6. If K_w=49x10^{-14}, what will be neutral pH of H_2O? [log 7=-0.8451]   [6.1549]

7. Calculate pH when 9.8g of sulphuric acid is dissolved in 2L solution. [1]
8. The ionic product of water K_w is $2.93 \times 10^{-15} mol^2 dm^{-6}$ 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]
9. 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]
10. 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? [2×10^{-9}mol/L]
11. 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: ARTIFICIAL INTELLIGENCE
1. What is Machine learning? Name the three methods of machine learning.
2. How are correlation measures used in AI applications?
3. Name some examples of regression algorithms?
4. What are regression algorithms used for?
5. What is Linear regression? Give two applications of regression in machine learning?
6. How can outliers impact regression analysis?
7. What is the primary difference between classification and regression?
8. Provide examples of classification problems in real-life scenarios.
9. What are some common applications of clustering techniques?
10. List the types of clustering methods.
11. How does classification model work?
12. Explain the types of clustering.
13. Write any two advantages and disadvantages of linear regression.
14. What are the steps involved in k-NN algorithm?
15. What are the steps involved in k-means clustering?
16. Asmita is developing an AI-driven recommendation system for a retail e-commerce platform. What type of machine learning method might she have used to:
a. Train the model with details of past purchases, user interactions, and product ratings?
b. Identify groups of similar users or products based on their browsing behaviour?

Subject: PHYSICAL EDUCATION
Sai kehlo india fitness tests for age group 5-8 years and 9 to 18 years.