

## English

### A. Write the main points of the prose -

1. The Portrait of A Lady
2. The Summer Of The Beautiful White Horse

### B. Write the main points of the poem "A Photograph ".

C. As Mukul / Mahima of DAV Public School, write a speech to be delivered at the school assembly highlighting the importance of cleanliness, suggesting that the state of cleanliness reflects the character of its citizens. (150-200 words)

## MATHS

1. if  $a + ib = \frac{(x+i)^2}{2x^2+1}$ , prove that  $a^2 + b^2 = \frac{(x^2+1)^2}{(2x^2+1)^2}$ .
2. If  $(x + iy)^3 = u + iv$ , then show that  $\frac{u}{x} + \frac{v}{y} = 4(x^2 - y^2)$ .
3. Let  $A = \{1, 2, 3, \dots, 14\}$ . Define a relation  $R$  from  $A$  to  $A$  by  $R = \{(x, y) : 3x - y = 0, \text{ where } x, y \in A\}$ . Write down its domain, codomain and range.
4. Assume that  $P(A) = P(B)$ . Show that  $A = B$
5. Let  $A$  and  $B$  be sets. If  $A \cap X = B \cap X = \phi$  and  $A \cup X = B \cup X$  for some set  $X$ , show that  $A = B$ .
6. For all sets  $A, B$  and  $C$ , prove that
7. Let  $f = \left\{ \left( x, \frac{x^2}{1+x^2} \right) : x \in \mathbf{R} \right\}$  be a function from  $\mathbf{R}$  into  $\mathbf{R}$ . Determine the range of  $f$
8. Prove That:  $2 \cos \frac{\pi}{13} \cos \frac{9\pi}{13} + \cos \frac{3\pi}{13} + \cos \frac{5\pi}{13} = 0$
9. Prove that:  $\cos 20^\circ \cos 40^\circ \cos 60^\circ \cos 80^\circ = \frac{1}{16}$
10. If  $\tan x = -\frac{4}{3}$ ,  $x$  lies in II quadrant, then find  $\sin \frac{x}{2}$ ,  $\cos \frac{x}{2}$  and  $\tan \frac{x}{2}$
11. How many numbers are there between 100 and 1000 which have exactly one of their digits as 7 ?
12. If the letters of the word are arranged as in dictionary, find the rank of the word 'RANDOM'.
13. There are 15 points in a plane, no three of which are collinear except 6 of them which are all on a line. How many (i) straight lines (ii) triangles can be formed by joining them.

## PHYSICS

Write all the NCERT Exercise questions from

- 1) Units and Measurement
- 2) Motion in Straight Line
- 3) Motion in Plane
- 4) Laws of motion
- 5) Work, Energy and Power

## CHEMISTRY

Some Basic Concepts of Chemistry

- What is the significance of the mole concept in solving stoichiometry and chemical calculations?
- Calculate the molecular mass of  $\text{CH}_4$ ,  $\text{CO}_2$ , and  $\text{H}_2\text{O}$ .
- State and explain the law of multiple proportions with a suitable example.
- Differentiate between a mixture and a compound with examples.
- A solution contains 10% NaCl by mass. Calculate the amount of NaCl present in 150 g of this solution.

Structure of Atom

- Describe the main postulates of Bohr's model of the atom.
- Why do all isotopes of an element exhibit the same chemical behavior?
- What is the significance of quantum numbers in describing the arrangement of electrons in an atom?
- Differentiate between atomic number and mass number with suitable examples.
- Calculate the number of radial nodes for the 4p orbital.

Periodic Classification of Elements

- What is the basis for classifying elements in Mendeleev's periodic table?
- Discuss the trend in atomic size across a period and down a group in the modern periodic table.
- Why are noble gases placed in a separate group in the periodic table?
- Write the general electronic configuration of d-block elements. Give one example.
- Find the group, period, and block of the element with atomic number 82.

Thermodynamics

- State the first law of thermodynamics. Give an example of its application.
- A system absorbs 30 kJ of heat and does 10.4 kJ of work on its surroundings. Calculate the change in internal energy.
- What is the difference between  $C_p$  and  $C_v$  for an ideal gas?
- 500 joule of heat is supplied to a system at constant volume. The temperature increases from  $20^\circ\text{C}$  to  $25^\circ\text{C}$ . What is the change in internal energy?
- Which would have higher entropy, an ideal crystal or a real crystal? Explain.

## BIOLOGY

1. Make concept map of the following chapters in your biology notebook.

Chapters :

- i. Plant kingdom
- ii. Animal kingdom
- iii. Cell

2. Solve set 1 and set 2 mid term question paper of class 11.

3. Solve all the ncert exercise questions from chapter 1 to chapter 8.

Note: All questions must be done neatly in biology note book with well labelled diagram as per the need of the questions.