NEW STANDARD ACADEMY

Marks: 80

Date : 24-06-24 **CLASS : 10TH** **Time: 3 HRS**

PHYSICS

1. A square ABCD of side 1 mm is kept at distance 15cm infront of the concave mirror as shown in the figure .The focal length of the mirror is 10 cm. Find the length of the perimeter of its image.
2. The focal length of a concave mirror is 30 cm. Find the position of the object in front of the mirror , so that image is three times the size of object.
3. What is meant by saying that a potential difference between two points is 1V?
4. Will current flow more easily through a thick wire or a thin wire of the same material, when connected to the same source? Why?
5. On what factors does the resistance of a conductor depend?
6. A hot plate of an electric over connected to a 220V line has two resistance coils A and B, each of 24Ω resistance, which may be used separately, in series, or in parallel. What are the currents in the two cases?
7. A 24 V potential difference is applied across a parallel combination of four 6 ohm resistors. The current in each resistor is:
8. Three resistors of 4.0 Ω, 6.0Ω and 10.0Ω are connected in series. What is their equivalent resistance:
9. Draw a ray diagram to show the refraction of light through a glass prism .Mark on it
   a) The incident ray
   b) The emergent ray and
   c) The angle of deviation.
10. Draw a labeled ray diagram to illustrate the dispersion of a narrow beam of white light when it passes through a glass prism.

CHEMISTRY

1. A solution of potassium chloride when mixed with silver nitrate solution, an insoluble white substance is formed. Write the chemical reaction involved and also mention the type of the chemical reaction?
2. Ferrous sulphate decomposes with the evolution of a gas having a characteristic odour of burning sulphur. Write the chemical reaction involved and identify the type of reaction.
3. Why do fire flies glow at night?
4. Grapes hanging on the plant do not ferment but after being plucked from the plant can be fermented. Under what conditions do these grapes ferment? Is it a chemical or a physical change?
5. Which among the following are physical or chemical changes?
   (a) Evaporation of petrol
   (b) Burning of Liquefied Petroleum Gas (LPG)
   (c) Heating of an iron rod to red hot.
   (d) Curdling of milk
   (e) Sublimation of solid ammonium chloride
6. On heating blue coloured powder of copper (II) nitrate in a boiling tube, copper oxide (black), oxygen gas and a brown gas X is formed
   (a) Write a balanced chemical equation of the reaction.
   (b) Identity the brown gas X evolved.
   (c) Identity the type of reaction.
   (d) What could be the pH range of aqueous solution of the gas X?
7. Give the characteristic tests for the following gases
   (a) CO_2
   (b) SO_2

(c) O_2
(d) H_2

8. What happens when a piece of
(a) zinc metal copper is added to copper sulphate solution?
b) aluminium metal is added to dilute hydrochloric acid?
(c) silver metal is added to copper sulphate solution? Also, write the balanced chemical equation if the reaction occurs
9. What happens when zinc granules are treated with dilute solution of H_2SO_4 prime HCI, HNO, NaCl and NaOH, also write the chemical equations if reaction occurs.
10. On adding a drop of barium chloride solution to an aqueous solution of sodium sulphite, white precipitate is obtained.
(a) Write a balanced chemical equation of the reaction involved
(b) What other name can be given to this precipitation reaction?
(c) On adding dilute hydrochloric acid to the reaction mixture, white precipitate disappears. Why?

BIOLOGY

1. Expand the term PCT, DCT, GFR.
2. What is excretion?
3. What do you mean by uricotelic animal?
4. Name the main nitrogenous waste excreted out in fish and birds.
5. Draw the neat & clean diagram of nephron and labeled it.
6. Name the types of nephron
7. What are the methods used by plants to get rid of excretory products?
8. Why right kidney is slightly lower in Position?
9. Name the components of excretory system of human beings?
10. Explain Micturition.

MATHS

1. If $\left(x-\frac{1}{2}\right)^2-\left(x-\frac{3}{2}\right)^2=x+2, then\ x=$?
2. Divya deposited ₹1000 at compound interest at the rate of 10% per annum .The amounts at the end of first year second year third year ,… from an AP. Justify your answer.
3. Find the common difference of each of the following AP:
i) $\frac{1}{2b}, \frac{1-6b}{2b}, \frac{1-12b}{2b}, \ldots$
ii) 4,9,14,19…..
4. Write first four terms of the AP, when the term a and the common difference d are given as follows:
a) a =10,d =7
b) a = -3, d = 0
5. Find the 10^{th} term of the AP: 2,7,12,…
6. Find the sum and the product of the roots of the equation

$\sqrt{3}x^2+27x+5\sqrt{3}=0$

7. The sum of first q terms of an AP is $63q-3q^2$. If its pth term is-60, find the value of p. Also find the 11th term of this AP.
8. If S_n denotes the sum of first n terms of an AP, prove that $S_{30} = 3\ (S_{20}-S_{10})$
9. Find the sum of first 1000 positive integers.
10. The sum of first 30 terms of an AP is 1920.If the fourth term is 18 find the 11^{th} term.