ST. XAVIER'S SENIOR SECONDARY SCHOOL, DELHI – 110054

Class 10 Time : 1½ hrs.

21-12-2017 Pre-Annual Test in SCIENCE M. Marks : 40

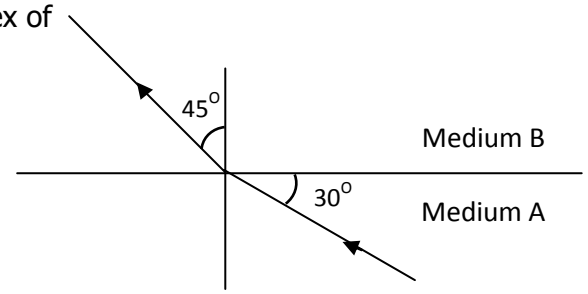
PHYSICS

1. Why magnification produced by a rear view mirror fitted in vehicles is always less than 1? (1)

2. Find the angle of reflection for a ray passing through centre of curvature of concave mirror inclined at an angle of 30° to principal axis. (1)

3. Draw a ray diagram to show path of light passing through a glass slab. What is lateral displacement? On what factor does it depend? (2)

4. State the law used and find refractive index of medium 'B' with respect to medium 'A' for the given diagram. (2)



5. Define principal focus of a mirror. A 10mm tall pin is placed vertically in front of mirror and 5mm tall image of the pin is formed at a distance 30cm in front of the mirror. Find the focal length of mirror. (3)

6. A student captures the image of a candle flame on a white screen using a lens. The position of candle, lens and the screen are observed respectively at 12cm, 50cm and 88cm.
   a) Find power and nature of lens used.
   b) Where will the image be formed if he shifts the candle towards lens to a position of 31cm?
   c) Draw a ray diagram to show image formed if candle is further shifted towards the lens. (5)

CHEMISTRY

1. Define the terms: (1)
   a) Functional Groups b) Homologous Series

2. A metal compound A reacts with Dil. Hydrochloric acid to produce effervescence. The gas evolved extinguishes a burning candle. Write a balanced chemical equation for the reaction if one of the products formed is calcium chloride. (1)

3. Draw the structures of:
   a) Iso Pentane b) Hexanal (1)

4. State the Modern Periodic Law. How many groups are present in the modern periodic table? (1)

5. Explain how does the size of the atom vary across a period? (1)

6. What is baking powder? How does it make the cake soft and spongy? (1)

7. Give Reason for below: (1)
   a) Carbon is able to form large varieties of compounds.
   b) Soaps are not suitable for washing clothes with hard water.

8. How does the electronic configuration of an atom relate to its position in the modern periodic table? (1)

9. Na, Mg, Al are the elements of the same period of the Modern Periodic tables having one, two and three valence electrons respectively. Which of these elements is least

reactive and why? (1)

10. The structural formula of an ester is:

$CH_3COOC_2H_5$

Write the molecular formula and name of alcohol and acid from which it would have been formed. (1)

11. a) Name the sodium compound which is used for softening the hard water.
    b) Which of these has higher concentration of H^+ (Hydrogen Ions)?
    1 M HCl or 1 M CH_3COOH
    c) Write the formula of a basic salt.
    d) Why does distilled water not conduct electricity, where as rain water does? (2)

12. Write the balanced chemical equation to show the reaction between
    a) Ethanol and Sodium b) Ethanoic acid and Sodium carbonate. (2)

BIOLOGY

1. Name any sexually transmitted disease caused by
    a) bacterial infection b) viral infection (1)

2. List any 2 changes which takes place on the onset of puberty in males. (1)

3. Differentiate between
    a) food chain and & food web b) autotrophs and heterotrophs (2)

4. a) Define biomagnification.
    b) Calculate the energy transferred to the next trophic level if the first trophic level possess 10000J of energy. (2)

5. a) What is asexual reproduction?
    b) Draw a longitudinal section of a bisexual flower and label the following:
    i) anther ii) style
    iii) filament iv) stigma (3)

6. Draw a well labelled diagram of female reproductive system. Label the following parts and also state the function of each
    a) ovary b) oviduct c) uterus (3)

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