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PODAR SCHOOL

CHANGEMAKER SCHOOLS

	TEST SERIES – II	**DATE : 05.01.2019**
: X	**(2018 - 2019)**	**TIME ALLOWED: 3 Hrs**
CT : SCIENCE		**MAXIMUM MARKS : 90**

l Instructions:
Questions carrying two marks must be answered in 30-40 words each.
Questions carrying three marks must be answered in 40-50 words each.
Questions carrying five marks must be answered in 50-60 words each.
All questions are compulsory.

PHYSICS

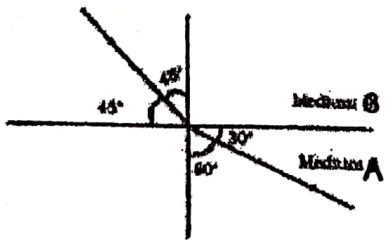
A ray of light enters from air into a medium of refractive index 1.5. Calculate the percentage change in its speed. 2

Explain the following terms: 2
) Solar panel.
) Wind energy farm.

How does a rainbow form? Draw a labelled diagram to illustrate the formation of rainbow. 2

) List two characteristics of a good fuel. 3
) Wind is a renewable source of energy, yet it has not gained popularity in India. Give two reasons.

a) Figure below shows a ray of light as it travels from medium A to medium B. Find the refractive index of the medium B relative to medium A. (Given $\sin 30^0 = 1/2$, $\sin 60^0 = \sqrt{3}/2$, $\sin 45^0 = 1/\sqrt{2}$) 3



) List two changes a light ray would undergo when it goes from a rarer medium to a denser medium.

Using a neat diagram, discuss an experiment to show the scattering of light through a (i) true solution (ii) colloidal solution. 3

7. a) State the function (i) cornea (ii) ciliary muscles in the human eye.
   b) What is atmospheric refraction? Use this phenomenon to explain twinkling of stars.

8. a) To construct a ray diagram, we use two rays of light which follow a definite path aft reflection from the mirror. List these two rays and state the path of these rays after reflectio from a concave mirror.
   b) An object is placed in front of a converging lens such that it's diminished; real image formed on the screen. Draw a ray diagram to show the formation of image.
   c) Two thin lenses are placed in contact. The focal length of one of the lens is 50 cm and th power of another lens is -2.5 D. Find the power of the lens combination.

9. a) Draw a diagram to show the path of a light ray through a glass prism. Mark angle incidence, angle of emergence, angle of deviation and angle of prism in it.
   b) (i) A person is unable to read closer than 40 cm. Calculate the power of a lens which woul enable him to read at a least distance of distinct vision.
   (ii) Give two possible causes for this defect in his vision.

10. A student focuses the image of a candle flame, placed at about 2 m from a convex lens focal length 10 cm, on a screen. After that he moves the flame gradually towards the le and each time focuses its image on the screen.
   a) In which direction does he move the lens to focus the flame on the screen?
   b) What happens to the size of the image of the flame formed on the screen?
   c) What difference is seen in the intensity (brightness) of the image of the flame on the screen
   d) What is seen on the screen when the flame is very close (at about 5 cm) to the lens?

CHEMISTRY

1. a) What is a universal indicator?
   b) During the nettle leaf sting a chemical is injected into the skin of a person. Name the chemical injected and how can the effect of these stings be neutralised?

2. a) Name
   (i) the sodium compound which is used for softening hard water.
   (ii)the hetroatoms present in the following compound CH_3-CH_2-O-CH_2-CH_2Cl.

3. Complete the given chemical equations and also mention the role of metals or reagents written on the arrows .

   a) $C_2H_5OH \xrightarrow{\text{conc. } H_2SO_4}$

   b) $C_2H_5OH \xrightarrow{\text{Alk } KMnO_4}$

   c) $C_2H_5OH + CH_3COOH \xrightarrow{\text{conc. } H_2SO_4}$

   d) $C_2H_4+H_2 \xrightarrow{Ni}$

3

a) State the chemical properties on which the following uses of baking soda are based:
(i) as an antacid.
(ii) as soda acid fire extinguisher.
(ii) to make bread and cakes soft and spongy.

b) What is observed when SO_2 is passed through
(i) water (ii) lime water

c) Sweet tooth may lead to tooth decay. How can it be prevented? Explain.

3

a) Draw the electron dot structure of ethanoic acid.

b) An element of Group 14 has two common allotropes, 'A 'and' B.' 'A' is very hard and a bad conductor of electricity, while 'B' is soft to touch and good conductor of electricity. Identify the element and its allotropes. Explain the reason for the different properties exhibited by them.

Name the compound whose one formula unit is associated with 10 water molecule. How is it prepared? Give chemical equations for its preparation.Give two uses of the compound. 3

3

What happens when;(give only chemical equations)
(i)Ethanol and ethane burns in air.
(ii)Ethanol and ethanoic acid reacts with sodium metal
(iii)Ethanol and ethanoic acid react with sodium carbonate
(iv)Ethyl ethanoate reacts with caustic soda.

5

a) Raj went to a doctor as he had fractured his- arm The doctor applied a white coloured substance 'X' which was kept in an air tight container.
Identify 'X'. Why is it kept in an airtight container?
With the help of a chemical equation explain how 'X' is formed.

b) (i) Identify the acid and the base whose combinations form the common salt that you use in your food. Identify the type of salt formed. Name any two chemicals in which this salt is used as a raw material.
(ii)What is rock salt? Mention its colour and the reason due to which it has this colour.
(iii)What happens when electricity is passed through brine? Write the chemical equation for it.

5

a) Give reason:
(i)Carbon cannot form C^{+4}cations or C^{-4} anions
(ii)Covalent compounds do not conduct electricity
(iii)Detergents are better cleansing agents than soaps.

b) A compound **'C'** (molecular formula $C_2H_4O_2$) reacts with sodium metal to form a compound **'R'** and evolves a gas which burns with a pop sound. Compound **'C'** on treatment with an alcohol **'A'** in presence of an acid forms a sweet smelling compound **'S'**(molecular formula $C_3H_6O_2$). On addition of NaOH to **'C'** it also gives **'R'** and water. **'S'**on treatment with NaOH solution gives back **'R'** and **'A'**.
Identify C, R, A, S and write down all the chemical reactions involved.

In a laboratory of a school , students are studying the properties of ethanoic acid. State any two physical properties of ethanoic acid and a chemical test for its acidic nature. 2

BIOLOGY

1. Which class of chemicals is linked to the decrease in the amount of ozone in the upper atmosphere of the earth? Why is it necessary to conserve ozone layer?

2. a) List any two characteristics of lungs which make it an efficient respiratory surface.
   b) Name any two excretory products of plants other than oxygen and carbon dioxide.

3. a) What are the possibilities for a flower to reproduce by self pollination?
   b) What are the events that take place in a flower after fertilization has taken place?

4. State the role of following in the human digestive system.
   a) Hydrochloric acid
   b) Villi
   c) Trypsin and lipase

5. a) Differentiate between the mode of reproduction in amoeba and plasmodium.
   b) Explain the mode of reproduction in Hydra.

6. Consider the following organisms in a food chain. Deer, Grass, Lion. If 50000J of ene available with the sun, how much energy would be available to the Deer to transfer it t Lion?

7. a) The level of energy reaching from one tropic level to the next decreases. Suggest a reas for this occurrence.
   b) Explain any two methods to dispose non-biodegradable waste.

8. a) Name the site of exchange of material between the blood and surrounding cells.
   b) Diffusion alone can supply all cells of a plant with oxygen. Is this true? Give reason.
   c) Draw a schematic representation of transport and exchange of oxygen and carbon dioxid human body.

9. a) Draw a neat diagram of female reproductive system and label the following parts:
   (i) which allows entry of sperms
   (ii) which releases egg cells
   (iii) site of fertilization
   (iv) site of implantation
   b) Give reasons:
   (i) Placenta is extremely essential for foetal development
   (ii) Blocking of vas deferens prevents pregnancy

10. A student is observing a permanent slide showing sequentially the different stages of asexu reproduction taking place in yeast. Name the process and draw diagrams of what he observ in a proper sequence.