

PHYSICS · Class X

- 1) How can you identify the three types of mirrors without touching? State two positions in which a concave mirror produces a magnified image of a given object. List two differences between the two images.
- 2) a) A divergent lens has a focal length of 20 cm. At what distance should an object of height 4 cm from the optical centre of the lens be placed so that its image is formed 10 cm away from the lens. Find the size of the image also. b) Draw a ray diagram to show the formation of image in above situation.
- 3) Explain the following terms related to spherical lenses (i) optical centre (ii) Centre of curvature (iii) Principal axis (iv) Aperture (v) Principal focus. (vi) Focal length. b) A converging lens has focal length of 12 cm. Calculate at what distance should the object be placed from the lens so that it forms an image at 48 cm on the other side of the lens.
- 4) What is meant by power of a lens? Define its SI unit. You have two lenses A and B of focal lengths +10 cm and -10 cm, respectively. State the nature and power of each lens. Which of the two lenses will form a virtual and magnified image of an object placed at 8 cm from the lens? Draw a ray diagram to justify your answer.
- 5) A convex lens forms a real and inverted image of a needle at a distance of 50 cm from it. Where is the needle placed in front of the convex lens if the image is equal to the size of the object? Also find the power of the lens.
- 6) a) State the reasons which lead to hypermetropia. With the help of suitable diagram, explain this defect of vision and its correction. b) Draw diagram of an experimental arrangement for observing scattering of light in colloidal solution. Name the two chemicals used in this activity.
- 7) What is dispersion of white light? What is the cause of such dispersion? Draw a ray diagram to show the dispersion of white light by a glass prism. Give reason for the following natural phenomenon: (i) stars twinkle (ii) Planets do not twinkle (iii) stars appear raised in the sky.

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- 8) a) Derive the formula for the calculation of work done when current flows through a resistor. b) One electric bulb is rated 40W and 240V and other 25W and 240V. Which bulb has higher resistance and how many times.
- 9) a) What is meant by saying that the potential difference between 2 points is 1V? b) Why does the connecting cord of an electrical heater does not glow while the heating element does? c) Electrical resistivities of some substances at 20°C are given below. (i) Among silver and copper, which one is better conductor? why? (ii) Which material would you advise to use in electrical heating device? why?
- Silver  $- 1.60 \times 10^{-8} \Omega\text{-m}$  Cu  $- 1.62 \times 10^{-8} \Omega\text{-m}$  Tungsten  $5.2 \times 10^{-8} \text{m}$   
 Iron  $- 10.0 \times 10^{-8} \Omega\text{-m}$  Iron  $10.0 \times 10^{-8} \Omega\text{-m}$  Mercury  $940 \times 10^{-8} \Omega\text{-m}$   
 Nichrome  $- 100 \times 10^{-8} \Omega\text{-m}$
- 10) A piece of wire is redrawn, without change in volume so that its radius is halved. Compare the new resistance with the original resistance.
- 11) List four important features of domestic electric circuits. Draw schematic diagram of common domestic circuit showing live, neutral and earth wires.
- 12) Explain the construction, principle and working of an electric motor.
- 13) Out of the two elements A and B with mass number 2 and 235 respectively. Which one is suitable for making (a) nuclear reactor, (ii) a hydrogen bomb. Name the nuclear reaction involved in each case. Write one difference between the two types of nuclear reactions. Give two advantages and two hazards of nuclear energy.
- 14) Increasing demand of fossil fuels has caused harm to our environment. List its three ill-effects. Suggest three measures to reduce the consumption of fossil fuels.
- 15) a) Define electromagnetic induction. b) Two coils P and S are wound over the same iron core. Coil P is connected to battery and key and coil S is connected to galvanometer. Draw a suitable diagram of this arrangement and write your observation when
- i) Current in the coil P is started by closing the key.
  - ii) Current continues to flow in coil P.
  - iii) Current in coil P is stopped by removing the key. Explain the reason for such observations.

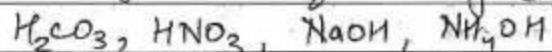


Ques 1 Give reasons:

- why should magnesium ribbon be cleaned before burning in air?
- why is photosynthesis considered an endothermic reaction?
- why is combustion reaction an oxidation reaction?

Ques 2 State Arrhenius concept of acids and bases.

Select a strong acid and a weak base from amongst the following substance.



Ques 3 write balance chemical equations for the following

- atom chlorine gas is passed through dry slaked lime
- Bleaching powder is kept open in air.
- Sodium bicarbonate reacts with dilute hydrochloric acid.
- Electricity is passed through brine.
- Formation of baking soda from sodium chloride.

Ques 4 what is corrosion of metals? Name one metal which does not corrode and one which corrodes on being kept in open atmosphere.

Ques 5 state the difference between modern periodic table and Mendeleev's periodic table.

7 chemistry

Identify C, R, A, S and write down the reactions involved

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Ques 6 The neutral atom of an element consists 12 electrons in its atom

- Name element E and in which period & group is 'E' placed.
- How many electrons it needs to lose or gain to achieve noble gas configuration.
- What will be the nature of oxide (acidic/basic) of E? Justify your answer.

Ques 7 Give reasons -

- Why do ionic compounds have high melting & boiling point?
- Non-metals in general do not displace hydrogen from dilute acids.
- Hydrogen gas is not evolved when zinc metal reacts with dil. ~~HCl~~  $\text{HNO}_3$ .
- School bells are made up of metals.
- Oxides of highly reactive metals cannot be reduced by carbon.

Ques 8 A compound C (molecular formula  $\text{C}_2\text{H}_4\text{O}_2$ ) reacts with Na-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 the presence of an acid forms a sweet smelling compound S (molecular formula  $\text{C}_3\text{H}_6\text{O}_2$ ) on addition of NaOH to C it also gives R and water. S on treatment with NaOH solution gives back R.

(4)

Ques 9 i) State the role of acid in our stomach.

ii) Define antacids. Give two examples of antacids.

Ques 10 An organic compound A on heating with concentrated  $H_2SO_4$  forms a compound which on addition of one mole of hydrogen in the presence of  $Ni$  forms a compound C. One mole of the compound C on combustion form two moles of  $CO_2$  & three moles of  $H_2O$ . Identify the compounds A, B & C and write the chemical equation of the reaction involved.

Ques 11 Can we use soaps and synthetic detergents to check the hardness of water?

Ques 12 An element X reacts violently with cold water. The reaction is endothermic and catches fire immediately. Name the element and write the reaction involved.

Ques 13 An element X (atomic number 17) reacts with two elements Y (atomic number 11) and element Z (atomic number 12) separately.

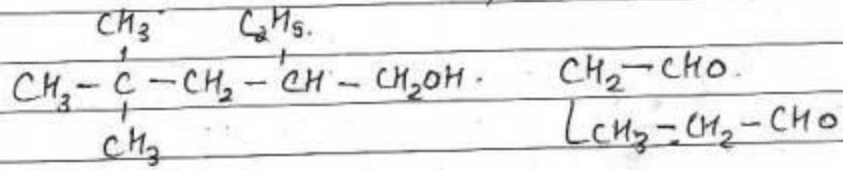
i) Identify the element X, Y, Z.

ii) Write the chemical formulae of compounds formed by X and Y and Z separately.

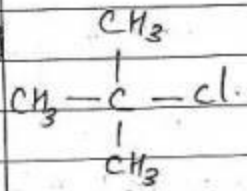
iii) Identify the nature of bonding in both the compounds.

Ques 14. Write the IUPAC name of the following compound (ii)

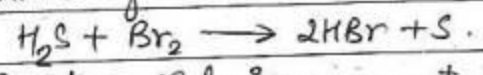
(i)



(iii)



Ques 15) i) Identify the compound which is oxidised in the following reaction.



ii) Identify the reducing agent in the following reaction.



CLASS - X (Biology)



- Q1 What happens when a mature spirogyra attains considerable length?
- Q2 What was Chipko Andolan? How did this Andolan ultimately benefit the local people and the environment.
- Q3 "Burning of fossils results in global warming." Give reasons to justify this statement.
- Q4. "Evolution and classification of organisms are interlinked." Give reasons to justify this statement.
- Q5 What is vegetative propagation? State two advantages and disadvantages of this method.
- Q6 Give the role of digestive enzymes in Human digestive system.
- Q.7. Draw and explain.
- 1) Human Brain
  - 2) Human Excretory system
  - 3) Breathing in Humans.
- (7)

Q8 Explain two main advantages associated with water harvesting at community level.

Q9 In the following food chain 100 J of energy is available to the lion. How much energy is available to the producer.

Plants → Deer → Lion

Q10. What is biodiversity? What will happen if biodiversity of an area is not preserved? Mention one effect of it.

Q11 List six specific characteristics of sexual reproduction

Q12. List 4 points of significance of reproductive health in society.

Q13. Explain.  
- Speciation  
- Natural selection

Q14. Compare Biodegradable and non-biodegradable substances.

Q15. Name the human male





reproductive organ that produces  
sperms and also secretes  
hormone.