

Roll no _____

PRE-BOARD EXAMINATION (2023-24)

CLASS-X

SUBJECT: SCIENCE (086)

SET 3

Max.Marks:80

Time allowed: 3 hours

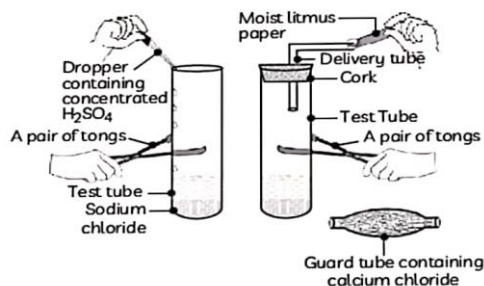
General Instructions:

- i. This question paper consists of 39 questions in 5 sections.
- ii. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- iii. Section A consists of 20 objective type questions carrying 1 mark each.
- iv. Section B consists of 6 Very Short Answer questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
- v. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words
- vi. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
- vii. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

Section A

Multiple Choice Questions

1. The coating formed on the metal such as iron, silver and copper after corrosion will be:
 - a) Brown, Black and Green in colour
 - b) Black, Brown and Green in colour
 - c) Brown in colour in all the metals
 - d) Black in colour in all the metals
2. Calcium Oxide reacts vigorously with water to produce
 - a) Calcium Hydroxide releasing a large amount of heat
 - b) Calcium Hydroxide absorbing a large amount of heat
 - c) Calcium Oxide and Hydrogen with a release of large amount of heat
 - d) Calcium Oxide and Hydrogen with the absorption of large amount of heat



3. The change in colour of the moist litmus paper in the above figure is due to:
- Presence of acid.
 - Presence of base.
 - Presence of $H^+(aq)$ in the solution.
 - Presence of litmus which acts as an indicator.
4. The colour of pH paper strip at the pH values of 1, 7 and 14 will be:
- Green, red and blue
 - Red, green and blue
 - Blue, green and red
 - Green, blue and red
5. Solder is an alloy of
- Lead and copper
 - Copper and tin
 - Lead and tin
 - Zinc and tin
6. Which of the following property is generally not shown by metals:
- Electrical Conduction
 - Sonorous in nature
 - Dullness
 - Ductility
7. An element reacts with oxygen to give a compound with a high melting point. This compound is

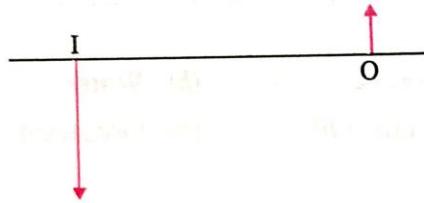
also soluble in water. The element is likely to be:

- a) Calcium
 - b) Carbon
 - c) Silicon
 - d) Iron
8. Tiny pores present on the surface of the leaf are called
- a) Stomata
 - b) Guard cells
 - c) Chloroplast
 - d) None of these
9. Organisms which break down the food outside the body and then absorb it are
- a) Bread mould
 - b) Mushroom
 - c) Neither a) nor b)
 - d) Both a) and b)
10. The number of pair(s) of sex chromosomes in the zygote of humans is
- a) One
 - b) Two
 - c) Three
 - d) Four
11. The very small gap between two nerve cells is called
- a) Myelin
 - b) Impase
 - c) Synapse
 - d) All of these
12. Which among the following is not sexually transmitted:
- a) Syphillis
 - b) Hepatitis
 - c) Warts
 - d) Gonorrhoea

13. In Ohm's law experiment a physical quantity / quantities which is / are to be kept constant while doing experiment is / are:

- a) Potential difference
- b) Current
- c) Temperature
- d) Potential difference, current and temperature

The figure shows the positions of object O and its magnified and inverted image I.



14.

This is possible only if

- a) A concave mirror is placed between O and I.
- b) A concave mirror is placed to the right of O.
- c) A concave mirror is placed to the left of I.
- d) A convex mirror placed between O and I.

15. Which of the following limits the number of trophic levels in a food chain?

- a) Decrease in energy at Higher trophic levels
- b) Deficient Food supply
- c) Polluted air
- d) Water

16. Humans have two different chromosomes, X and Y. Based on the Mendel's law, a male offspring will inherit which combination of chromosomes:

- a) Both the X chromosomes from one of its parents
- b) Both the Y chromosomes from one of its parents
- c) Combination of X chromosomes from either of its parents
- d) Combination of X and Y chromosomes from either of its parents

Assertion-Reason Type

In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the

correct choice as:

- (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
- (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
- (c) Assertion (A) is true but reason (R) is false.
- (d) Assertion (A) is false but reason (R) is true.

17. Assertion: Reduction occurs with the gain of hydrogen atoms.

Reason: Oxidation occurs with the loss of hydrogen atoms.

18. Assertion: Traits like height or eye colour are inherited traits.

Reason: Inherited traits are not transferred from parents to offsprings progeny.

19. Assertion: On changing the direction of flow of current through a straight conductor, the direction of a magnetic field around the conductor is reversed.

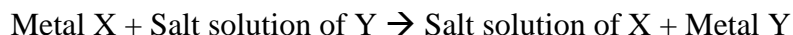
Reason: The direction of magnetic field around a conductor can be given in accordance with left hand thumb rule.

20. Assertion: Deficiency of iodine in the diet causes goitre.

Reason: Iodine is a hormone.

Section B

21. When metal X is added to salt solution of a metal Y, following chemical reaction takes place:



Mention the type of reaction and the reactivity of metal X and metal Y.

22. Differentiate between transpiration and translocation.

23. Why does absorption of digested food occur in the wall of alimentary canal?

OR

What are the methods used by plants to get rid of excretory products?

24. How much energy will be available to hawks in the food chain comprising hawk, snake, paddy and mice, if 1000000 J of energy is radiated to paddy from the sun?

25. Why do we observe seven colours when white light passes through a glass prism? Which component of white light deviates the least?

OR

A glass prism is able to produce a spectrum when white light passes through it but glass slab does not produce any spectrum. Why is it so?

26. How is ozone formed in the atmosphere? Explain with equations.

Section C

27. Give reason why

- a) Gold and silver are used for making jewellery.
- b) A few metals are used for making cooking utensils.
- c) Potassium is kept immersed in kerosene.

OR

State the conditions under which the following metals react with water. Write equation for each reaction.

- a) Na
- b) Mg
- c) Fe

28. a) Write the electron dot structure for sodium and oxygen.

b) Show the formation of Na_2O by the transfer of electrons.

c) Ionic compounds do not conduct electricity in solid state. Why?

29. What is photosynthesis? Write a chemical equation to show photosynthesis in plants.

30. What do you mean by biodegradable wastes? Construct the food chain comprising the following – snakes, hawks, rats, plants.

31. An object is placed at a distance of 10 cm from a convex mirror of focal length 15 cm. Find the position and nature of the image.

32. a) Define power of a lens. Give its SI unit.

b) An optician prescribed a corrective lens of power +2D. What is the focal length of the lens? Name the type of lens.

33. a) State whether an alpha particle (positively charged) will experience any force in a magnetic field if -

- i) it is placed at rest.
- ii) it moves parallel to the field lines.
- iii) it moves perpendicular to the field lines.

b) Think you are sitting in a chamber with your back to one wall. An electron beam moving horizontally from back wall towards the front wall, is deflected by strong magnetic field to your right side. What is the direction of magnetic field?

Section D

34. A compound C (molecular formula $C_2H_4O_2$) 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 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 the reactions involved.

OR

An organic compound A, on heating with concentrated H_2SO_4 , forms a compound B which on addition of one mole of hydrogen in presence of Ni forms a compound C. One mole of compound C, on combustion, forms 2 moles of CO_2 and 3 moles of H_2O . Identify the compounds A, B and C. Write the chemical equations of the reactions involved.

35. a) What is placenta?

b) Describe structure and functions of placenta.

OR

a) Draw different steps of binary fission in amoeba.

b) Write advantages of vegetative propagation. (3 points)

36. a) What is a solenoid?

b) Can a freely suspended current carrying solenoid stay in one direction? Justify your answer.

c) What will happen when the direction of current in the solenoid is reversed? Explain.

OR

a) How is an electromagnet made? What type of core is used to make an electromagnet?

b) State two ways by which the strength of an electromagnet can be increased.

c) Give any two difference between an electromagnet and a permanent magnet.

Section E

Read the following passage and answer the questions

37. All metals do not react with oxygen with the same speed. Different metals show different reactivity towards oxygen. For eg. Potassium and Sodium react so vigorously that they catch fire even if kept in open air. They are therefore kept under kerosene or paraffin oil. Metal oxides are solids. They are basic in nature. They turn red litmus blue. Some metal oxides such as aluminium oxide, zinc oxide etc. show both acidic as well as basic behaviour.

a) Arrange these metals in the decreasing order of reactivity – Fe, Al, Zn, Mg.

b) Name the element which reacts with oxygen to give a compound with a high melting

point.

OR

- b) Why are sodium and potassium stored in kerosene?
- c) An element X forms an oxide X_2O_3 which is basic in nature. Is the element acidic or basic?
- d) Name an element which reacts violently with water.

38. Mendel used a number of contrasting visible characteristics of garden peas – round / wrinkled seeds, tall / short plant, white / violet flowers and so on. He took pea plants with different characteristics – a tall plant and a short plant, produced progeny from them and calculated the percentages of tall or short progeny. “In this first generation, or F1 progeny – no medium height plants.” All plants were tall. Mendelian experiments test this by getting both the parental plants and these F1 tall plants to reproduce by self-pollination.

- a) Give genotype of the parents of F1 progeny.
- b) Give genotype and phenotype of F1 generation.
- c) Make a cross between pure tall and pure dwarf pea plant

OR

- c) Why did Mendel select pea plants for this experiment? Write two reasons.

39. Sunita takes a mirror which is depressed at the centre and mounts it on a mirror stand. An erect and enlarged image of her face is formed. She places the mirror on a stand along a metre scale at 15 cm mark. In front of this mirror, she mounts a white screen and moves it back and forth along the metre scale till a sharp, well defined inverted image of a distant tree is formed on the screen at 35 cm mark.

- a) Name the mirror.
- b) Find the focal length of this mirror.
- c) Explain why does Sunita get sharp image of the distant tree at 35 cm mark.

OR

- c) Define focal length of spherical mirror. How is it related to radius of curvature of the mirror?