## BLUE PRINT : CLASS X

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Note: * - Internal Choice Questions of same chapter.

AR – Assertion, Reason based question
SECTION – A

1. \[2\text{HNO}_3 + \text{Ca(OH)}_2 \rightarrow \text{Ca(NO}_3)_2 + 2\text{H}_2\text{O};\] is an example of
   (i) displacement reaction  
   (ii) double displacement reaction  
   (iii) neutralisation reaction  
   (iv) combination reaction.
   (a) (i) and (ii)  (b) (ii) and (iii)  (c) (iii) and (iv)  (d) (i) and (iv)

2. A solution of NaCl
   (i) will turn red litmus blue
   (ii) will turn pH paper green
   (iii) will turn blue litmus red
   (iv) will not affect litmus
   (a) (i) and (ii)  (b) (i), and, (iii)  (c) (i) and (iv)  (d) (ii) and (iv)

3. An element has 12 protons. The group and period to which this element belongs to is
   (a) 2nd group, 3rd period  (b) 2nd group, 2nd period  
   (c) 3rd group, 2nd period  (d) 3rd group, 3rd period
   OR
   Which of the following is correct order of atomic size ?
   (a) Li < Na < K < Rb < Cs  (b) Li > Na > K > Rb > Cs  
   (c) Na < K < Li < Rb < Cs  (d) K < Na < Li < Rb < Cs

4. The muscular diaphragm that controls the size of the pupil is
   (a) cornea  (b) ciliary muscles  (c) iris  (d) retina
   OR
   A person uses a lens of power +3 D to normalise vision. Near point of hyper-me-tropic eye is
   (a) 1.66 m  (b) 0.66 m  (c) 0.33 m  (d) 1 m

5. A boy records that 4000 joule of work is required to transfer 10 coulomb of charge between two
   points of a resistor of 50 Ω. The current passing through it is
   (a) 2 A  (b) 4 A  (c) 8 A  (d) 16 A

6. Define catenation.
7. Calculate the current flows through the 10 Ω resistor in the following circuit.

![Circuit Diagram]

(a) 1.2 A  (b) 0.6 A  (c) 0.2 A  (d) 2.0 A

8. Energy can neither be created nor destroyed but still everybody discuss about the energy crisis because
(a) Energy transform into different form continuously.
(b) Usable form of energy is dissipated to the surroundings in less usable forms.
(c) Energy is consumed and cannot be used again.
(d) All of these

9. Which one of the following is an example of renewable resource?
(a) Coal  (b) Petroleum  (c) Wildlife  (d) Natural gas

OR
Which of the following are to be managed for sustainable development?
(a) Industries  (b) Forests  (c) Crops  (d) Resources

10. State the modern periodic law of classification of elements.

   Answer question numbers 11(i) - 11(iv) on the basis of your understanding of the following paragraph and the related studied concepts.

11. (a) Rahul once went to a construction site along with his father. There he saw large cranes lifting heavy iron loads. After sometimes, he noticed that all the cranes were lifting a bunch of iron rods and unloading it to other places. He was surprised and then enquired the crane man about it. The crane man then explained the use of electricity in lifting the load.
   11(i) According to you, which effect of electricity is used in cranes?
   11(ii) How electromagnet is formed
   (b) Solar cooker takes more time as compared to the LPG to boil potato or rice, yet Kunal uses solar cooker for such type of cooking:
   11(iii) Why does Kunal use Solar cooker instead of LPG?
   11(iv) Name the phenomenon which is responsible for obtaining high temperature in solar cooker.

   Answer question numbers 12(i) - 12(iv) on the basis of your understanding of the following paragraph and the related studied concepts.

12. Essentially, nerve cells, also known as neurons, are the active component of the nervous system. Neurons communicate with each other as well as with other cells through electric signals (nerve impulses), which in turn allows effector organs to respond to the appropriate stimuli. Nerve cells may be described as receivers and transmitters of information that allow an organism to respond appropriately. In the human body, the nervous system (which consists of the central
and peripheral nervous system) is said to contain about 1020 individual neurons. Each of the neurons is made up of several parts that enable them to perform their functions appropriately.

**12(i)** Name the part labelled A in the neuron drawn above.
(a) Dendrite  (b) Axon  (c) thyroid  (d) Nodes

**12(ii)** Name the part labelled B in the neuron drawn above.
(a) Dendrite  (b) Axon  (c) thyroid  (d) Nodes

**12(iii)** In what form does this information travel?

**12(iv)** Where is the impulse converted into a chemical signal for onward transmission?

For question numbers 13 and 14, two statements are given- one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below
i) Both A and R are true and R is correct explanation of the assertion.
ii) Both A and R are true but R is not the correct explanation of the assertion.
iii) A is true but R is false.
iv) A is false but R is true.

**13. Assertion (A):** Methane is simplest saturated hydrocarbon which is a major component of natural gas.
**Reason (R):** Methane belongs to alkene.

**14. Assertion (A):** Only a change in magnetic field lines linked with coil will induces current in the coil.
**Reason (R):** The presence of large magnetic flux through the coil maintains a current in a closed circuit coil.

**SECTION – B**

**15.** Describe the structure and functioning of nephrons.

**16.** (a) Define absolute refractive index of a medium.
(b) The radius of curvature of concave mirror is 50cm. Where should an object be placed from the mirror so as form its image at infinity? Justify your answer.

**17.** What is a reflex arc? Draw a neat labelled diagram of the components in a reflex arc. Why do impulses flow only in one direction in a reflex arc?

**18.** (a) Name the unit of inheritance. What is its function?
(b) How are inherited traits different from acquired traits? Give examples.

**19.** Two circular coils A and B of insulated wires are kept close to each other. Coil A is connected to a galvanometer while coil B is connected to a battery through a key. What will you observe in
coil A, if (a) current is passed through coil B by plugging the key, (b) the current is stopped by removing the plug from the key? (c) both the coils are moved in the same direction with the same speed? Explain your answer mentioning the name of the phenomena involved.

20. An atom has electronic configuration 2, 8, 2.
(a) What is the atomic number of this element?
(b) What is its valency?
(c) To which of the following elements would it be chemically similar and why? Be (4), O(8), justify your answer. (Atomic number are given in brackets)

21. (i) Create a terrestrial food chain depicting four trophic levels.
(ii) Why do we not find food chains of more than four trophic levels in nature?

OR

How will you create an artificial aquatic ecosystem, which is self-sustainable?

22. When we place a glass prism in the path of a narrow beam of white light, a spectrum is obtained. What happens when a second identical prism is placed in an inverted position with respect to the first prism? Draw a labelled ray diagram to illustrate it.

OR

Explain giving reason why the sky appears blue to an observer from the surface of the earth. What should the appearance of the sky be during the day for an astronaut staying in the international space station orbiting the Earth? State reason to justify your answer.

23. Name the type of chemical reaction represented by the following equation:
(a) \( \text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2 \)
(b) \( 3\text{BaCl}_2 + \text{Al(SO}_4\text{)}_3 \rightarrow 2\text{AlCl}_3 + 3\text{BaSO}_4 \)
(c) \( 2\text{FeSO}_4 \xrightarrow{\text{Heat}} \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3 \)

24. (a) Write the name given to bases that are highly soluble in water. Give an example.
(b) How is tooth decay related to pH? How can it be prevented?
(c) Why does bee sting cause pain and irritation? Rubbing of baking soda on the sting area gives relief. How?

OR

(a) Name the compound which is obtained from baking soda and is used to remove permanent hardness of water.
(b) Write its chemical formula.
(c) What happens when it is recrystallised from its aqueous solution?

SECTION – C

25. (a) Differentiate between soap and detergent.
(b) Explain why, soap from scum with hard water whereas detergents do not.

26. Give reasons for the following:
(a) Silver and copper lose their shine when they are exposed to air. Name the substance formed on their surface in each case.
(b) Tarnished copper vessels are cleaned with tamarind juice.
(c) Aluminium is more reactive than iron yet there is less corrosion of aluminium as compared to iron when both are exposed to air.

OR

(a) Define activity series of metals. Arrange the metals gold, copper, iron and magnesium in order of their increase in reactivity.
(b) What will you observe when:
(i) Some zinc pieces are put in copper sulphate solution.
(ii) Some silver pieces are put into green coloured ferrous sulphate solution.

27. (a) Why is the magnification produced by a concave lens always less than 1?
(b) You are provided with two lenses of focal lengths 10 cm and 20 cm. Which of the two lenses would you suggest to obtain greater convergence of refracted light? Justify your choice.
(c) An image 2/3rd the size of object is formed by a convex lens at a distance of 12 cm from it. Find the focal length of the lens.

OR
(a) What is meant by power of a lens? Define its S.I. unit.
(b) You have two lenses A and B of focal lengths +10 cm and –10 cm respectively. State the nature and power of each lens.
(c) Which of the two lenses will form a virtual and magnified image of an object placed 8 cm from the lens? Draw a ray diagram to justify your answer.

28. (a) Draw a sectional view of the human heart and label on it – Aorta, Right ventricle and Pulmonary veins.
(b) State the functions of the following components of transport system: (i) Blood (ii) Lymph

29. Draw a diagram of a human female reproductive system and label the part (i) that produces egg (ii) where fusion of egg and sperm takes place (iii) where zygote is implanted What happens to human egg when it is not fertilised?

OR
(a) What is fragmentation in organisms? Name a multicellular organism which reproduces by this method.
(b) What is regeneration in organism? Describe regeneration in Planaria with the help of a suitable diagram.

30. (a) Define electric power. Express it in terms of potential difference V and resistance R.
(b) An electrical fuse is rated at 2A. What is meant by this statement?
(c) An electric iron of 1 kW is operated at 220 V. Find which of the following fuses that respectively rated at 1 A, 3 A and 5 A can be used in it.