

SECOND TERM EXAMINATION

SCIENCE

(Class X)

(Life processes, Sustainable Management of Natural Resources, Periodic classification of elements, Metals and non-metals)

Question Paper

SECTION-A

(20 × 1 = 20)

1. The metals which are mixed with iron to make stainless steel are:

- (a) Copper and nickel
- (b) Nickel and chromium
- (c) Copper and Chromium
- (d) Copper and silver

2. During electrolytic refining of zinc, it gets:

- (a) Deposited on cathode
- (b) Deposited on anode
- (c) Deposited in cathode as well as anode
- (d) remains in the solution.

3. Which of the following metals exist in their native state in nature?

(i) Cu (ii) Au (iii) Zn (iv) Ag

(a) (i) and (ii)

(b) (ii) and (iii)

(c) (ii) and (iv)

(d) (iii) and (iv)

4. Galvanisation is a method of protecting iron from rusting by coating with a thin layer of:

(a) Gallium

(b) Aluminium

(c) Zinc

(d) Silver

5. Which of the following non-metals is a liquid?

(a) Carbon

(b) Bromine

(c) Phosphorous

(d) Sulphur

6. The order of decreasing atomic size is:

(a) $\text{Na} < \text{Mg} < \text{Al} < \text{Si}$

(b) $\text{Na} > \text{Mg} > \text{Al} > \text{Si}$

(c) $\text{Mg} < \text{Na} < \text{Al} < \text{Si}$

(d) $\text{Mg} > \text{Na} > \text{Al} > \text{Si}$

7. Deberienner's system of classification into triads was not found to be useful as he could identify only:

- (a) Two triads
- (b) Three triads
- (c) Four triads
- (d) Five triads

8. The elements A, B, C, D and E have atomic numbers 9, 11, 17, 12 and 13 respectively. Which pair of elements belong to the same group?

- (a) A and B
- (b) B and D
- (c) A and C
- (d) D and E

9. Movement of food through the oesophagus is due to

- (a) lubrication by saliva
- (b) peristalsis
- (c) Gravitational pull
- (d) all of these

10. Glomerular filtration is possible because

- (a) afferent arteriole has less diameter than the efferent arteriole
- (b) afferent arteriole has more diameter than the efferent arteriole
- (c) both have the same diameter
- (d) afferent capillaries have more diameter than efferent capillaries.

11. The inner lining of stomach is protected by one of the following from hydrochloric acid. Choose the correct one:

- (a) pepsin
- (b) Mucus
- (c) salivary amylase
- (d) Bile

12. Choose the correct path of urine in our body:

- (a) kidney → ureter → urethra → urinary bladder
- (b) kidney → urinary bladder → urethra → ureter
- (c) kidney → ureter → urinary bladder → urethra
- (d) urinary bladder → kidney → ureter → urethra

13. Total oxidation of 1 glucose molecule during aerobic respiration produces.

- (a) 38 ATP molecules
- (b) 30 ATP molecules
- (c) 36 ATP molecules
- (d) 32 ATP molecules

14. The important message conveyed by the 'Chipko Movement' is:

- (a) to involve the community in forest conservation efforts
- (b) to ignore the community in forest conservation efforts
- (c) to cut down forest trees for developmental activities
- (d) government agencies have the unquestionable right to order destruction of trees in forest

15. Opposition to the construction of large dams is due to

- (a) social reasons
- (b) economic reasons
- (c) environmental reasons
- (d) all the above.

16. Which of the following are known as "Green gold" of a country?

- (a) National parks
- (b) Sanctuaries
- (c) forests
- (d) Greenhouse gases.

17. Amrita Devi Bishnoi National Award is given for

- (a) Forest conservation
- (b) wildlife conservation
- (c) Rainwater harvesting
- (d) Ecological conservation

18. What is the name given for replenishment of forests?

- (a) Afforestation
- (b) Silviculture
- (c) Deforestation
- (d) Sericulture

19. Write the formulae of chlorides of Eka-silicon and Eka-aluminium, the elements predicted by Mendeleev

20. When air is blown from mouth into a test tube containing lime water, the lime water turned milky due to the presence of:

- (a) oxygen
- (b) carbon dioxide
- (c) nitrogen
- (d) water vapour

Section B**15X3 =45**

1. state the conditions under which the following metals react with water. write equation for each reaction: Na, Mg, Fe.

2. (a) A substance X, which is an oxide of a group 2 element, is used intensively in the cement industry. This element is present in bones also. On treatment with water it forms a solution which turns red litmus blue. Identify X and also write the chemical reactions involved.

(b) choose a metal from the following metals which reacts only with hot water : sodium, magnesium , iron mention the product formed during the reaction .

3. What is thermite reaction? How is it used to join the railway tracks or cracked machine parts? Explain with the help of an example.

4. (a) Show the formation of MgO by the transfer of electrons in the two elements

(b) Name the cation and anion

(c) write three properties of ionic compounds

5. (a) Name a non-metal which is lustrous and a metal which is non-lustrous.

(b) Write a balanced chemical equation for the reaction: Aluminium when heated in air. Write the name of the product.

(c) Why do ionic compounds not conduct electricity in the solid state.

6. List three kinds of blood vessels of human circulatory system and write their functions in tabular form.

7. Name the following:

(i) part where air is filtered by fine hair and mucus.

(ii) part which terminates in balloon-like structures.

(iii) balloon-like structures where exchange of gases takes place.

(iv) part which separates chest cavity from abdominal cavity.

(b) Why is the rate of breathing in aquatic organisms much faster than in terrestrial organisms?

8. Give reasons for the following:

(a) Lithium atom is smaller than Sodium atom.

(b) Chlorine (Atomic Number 17) is more electronegative than Sulphur (Atomic Number 16)

9. The electronic configuration of 4 elements A, B, C and D is as given under:

A-2,1

B-2,2

C-2,8,2

D-2

(a) Which amongst them belongs to the same group? Name it.

(b) Which amongst them belongs to the same period? Name it

(c) Which amongst them is inert? Name it

10. An element 'X' belongs to 3rd period and group 13 of the Modern Periodic Table.

(a) Determine the valence electrons and the valency of 'X'.

(b) Molecular formula of the compound formed when 'X' reacts with an element "Y" (atomic number = 8).

(c) Write the name and formula of the compound formed when "X' combines with chlorine.

11. An element X of group 15 exists as diatomic molecule and combines with hydrogen at 773 K in presence of the catalyst to form a compound, ammonia which has a characteristic pungent smell.

(a) Identify the element X. How many valence electrons does it have?

(b) Draw the electron dot structure of the diatomic molecule of X. What type of bond is formed in it?

(c) Draw the electron dot structure for ammonia and what type of bond is formed in it ?

12. What is ozone? How is it formed at the higher level of the atmosphere? What is likely to happen if the ozone layer is continuously damaged, which is in fact happening at the moment? List any two consequences of it.

13. Give reason for the following:

- (a) We can store copper sulphate solution in a silver
- (b) The reaction of zinc with dilute nitric acid does not produce hydrogen gas.
- (c) Food cans are coated with tin rather than zinc.

14. State the function of the following in the alimentary canal.

- (i) Liver
- (ii) Gall Bladder
- (iii) Villi

15. (a) What is the role of mucus in stomach?

(b) How exit of food from the stomach is regulated?

(c) Where does food enter from stomach?

Section C

7X5 =35

1. (a) Write the steps involved in the extraction of pure metals in the middle of the activity series from their carbonate ores.

(b) How is copper extracted from its sulphide ore? Explain the various steps supported by chemical equations. Draw labelled diagram for the electrolytic refining of copper.

2. (a) Why do we classify elements?

(b) What were the two criteria used by Mendeleev in creating his Periodic Table?

(c) Why did Mendeleev leave some gaps in his Periodic Table

(d) In Mendeleev's Periodic Table, why was there no mention of Noble gases like Helium, Neon, and Argon?

(e) Would you place the two isotopes of chlorine, Cl-35 and Cl-37 in different slots because of their different atomic masses or in the same slot because their chemical properties are the same? Justify your answer?

3. (i) Explain the steps for extraction of copper from its sulphide ore. Write the balanced equations involved in the process.

(ii) What is meant by refining of metals? Draw a diagram of electrolytic refining of copper and name the substances used as cathode, anode and the electrolyte.

4. Explain the following:

(a) Reactivity of Al decreases it is dipped in HNO_3 .

(b) Carbon cannot reduce the oxides of Na or Mg.

(c) NaCl is not a conductor of electricity in solid state, whereas it does conduct electricity in aqueous solution as well as in molten state.

(d) Iron articles are galvanised.

(e) Metals like Na, K, Ca and Mg are never found in their free state in nature.

5. (a) Mention any two components of blood.
- (b) Trace the movement of oxygenated blood in the body.
- (c) Write the function of valves present in between atria and ventricles
- (d) Write one structural difference between the composition of artery and veins.
6. (a) Draw a sectional view of human heart and label on it Aorta, Pulmonary arteries, Vena cava, Left ventricle.
- (b) Why is double circulation of blood necessary in human beings?
7. Describe the structure and functioning of nephron.