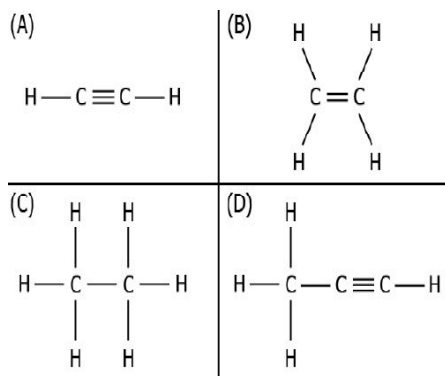


**Section-A(Each 1 mark)**

Select and write the most appropriate option out of the four options given for each of the questions 1 - 20. There is no negative mark for incorrect response.

1. The image represents the structure of a few hydrocarbon compounds.



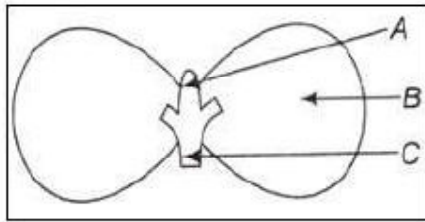
Which of these compounds can be classified as alkynes?

- a) Only (A)      b) Only (B)  
c) Both (A) and (D)  
d) Both (B) and (C)
2. When a non-metal is allowed to react with water:
- a)  $\text{CO}_2$  gas is formed  
b)  $\text{H}_2$  gas is formed  
c) Product formed depends on the temperature  
d) No products are formed
3. Farmers neutralise the effect of Acidity on the soil by adding –
- a) Slaked lime    b) Gypsum  
c) Caustic soda    d) Baking soda
4. The process in which a carbonate ore is

heated strongly in the absence of air to convert it into metal oxide is called

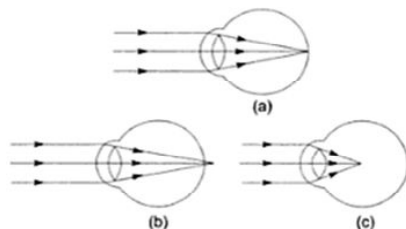
- a) Roasting      b) Reduction  
c) Calcination    d) Smelting
5. Which of the following is an endothermic process?
- a) Dilution of sulphuric acid  
b) Sublimation of dry ice  
c) Condensation of water vapours  
d) Respiration in human beings
6. Which of the following will undergo addition reactions?
- a)  $\text{CH}_4$               b)  $\text{C}_3\text{H}_8$   
c)  $\text{C}_2\text{H}_6$               d)  $\text{C}_2\text{H}_4$
7. In thermite welding a mixture of ..... and ..... is ignited with a burning magnesium ribbon which produces molten iron metal as large amount of heat is evolved.
- a) iron (III) oxide and aluminium powder  
b) iron (II) oxide and aluminium powder  
c) iron (III) chloride and aluminium powder  
d) iron (III) sulphate and aluminium powder
8. When a few drops of iodine solution are added to rice water, the solution turns blue- black in colour. This indicates that rice water contains:
- a) fats              b) complex proteins  
c) starch            d) simple protein
9. Posture and balance of the body is controlled by
- a) Pons              b) Medulla oblongata  
c) Cerebellum      d) Cerebrum

10. In the below figure, parts A, B and C are, sequentially,



- a) Cotyledon, plumule and radicle  
 b) Plumule, radicle and cotyledon  
 c) Plumule, cotyledon and radicle  
 d) Radicle, cotyledon and plumule
11. The secretion of which hormone leads to physical changes in the body when you are 10-12 years of age?
- a) Oestrogen from testes and testosterone from ovary.  
 b) Estrogen from adrenal gland and testosterone from pituitary gland.  
 c) Testosterone from testes and estrogen from ovary.  
 d) Testosterone from thyroid gland and estrogen from pituitary gland.
12. Which part of nephron allows the selective reabsorption of useful substances like glucose, amino acids, salts and water into the blood capillaries?
- a) Tubule      b) Glomerulus  
 c) Bowman's capsule  
 d) Ureter
13. With both eyes open, a person's field of view is about:
- a) 90°              b) 150°  
 c) 180°            d) 360°

14. Figure a, b, c respectively; indicate the point in case of:



- a) The Hypermetropia eye, the myopic eye and normal eye  
 b) The normal eye, the myopic eye and Hypermetropia eye  
 c) The normal eye, the Hypermetropia eye and myopic eye  
 d) The myopic eye, the normal eye and Hypermetropia eye

15. Which of the following constitutes a food chain?
- a) Grass, goat and human  
 b) Goat, cow and elephant  
 c) Grass, fish and zebra  
 d) Grass, wheat and apple
16. Mendel conducted his famous breeding experiments by working on the following:
- a) Drosophila      b) Escherichia Coli  
 c) Pisum Sativum  
 d) All of these

**Question No. 17 to 20 consist of two statements – Assertion (A) and Reason(R). Answer these questions selecting the appropriate option given below:**

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

17. **Assertion(A):** Electrovalency of Na is +1.  
**Reason(R):** The number of electrons which an atom either loses or gains in the formation of an ionic bond is known as its valency.
18. **Assertion(A):** The four chambered heart does not mix oxygenated and deoxygenated blood.  
**Reason(R):** Four chambered heart is found in mammals with advanced body functions.
19. **Assertion(A):** Virtual images are always erect.

**Reason (R) :** Virtual images are formed by diverging lenses only.

20. **Assertion(A) :** Variations are seen in offspring produced by sexual reproduction.

**Reason (R) :** DNA molecule generated by replication is not exactly identical to original DNA.

**Section-B (Each 2 marks)**

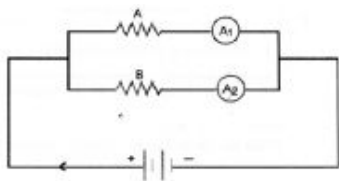
**Question No. 21 to 26 are very short answer questions**

21. In one of the industrial processes used to manufacture sodium hydroxide, a gas X is formed as a byproduct. The gas X reacts with lime water to give a compound Y used as a bleaching agent in the chemical industry. Identify X and Y giving the chemical equation of the reactions involved.
22. a) How do Leishmania and Plasmodium reproduce?  
b) State one difference in their mode of reproduction.
23. Diffusion is insufficient to meet the oxygen requirement of multicellular organisms like human. State reason.

**OR**

Draw a flow chart to show the break down of glucose by various pathways.

24. An object is placed perpendicular to the principal axis of a convex mirror of focal length 10 cm. The distance of the object from the pole of the mirror is 10 cm. Find the position of the image formed.
25. In the circuit diagram shown, the two resistance wires A and B are of the same length and same material, but A is thicker than B. Which ammeter  $A_1$  or  $A_2$  will indicate higher reading for current? Give reason.



$$\text{Current (I)} \propto \frac{1}{\text{Resistance}}$$

**OR**

State how the magnetic field produced by a straight current carrying conductor at a point depends on

- a) current through the conductor  
b) distance of point from conductor.
26. You have four resistors of  $8 \Omega$  each. Show how would you connect these resistors to have effective resistance of  $8 \Omega$ ?

**Section-C (Each 3 Marks)**

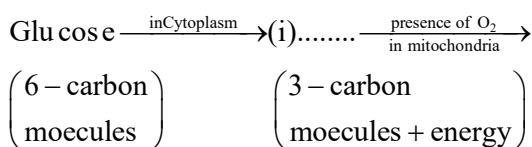
**Question No. 27 to 33 are short answer questions**

27. A student prepared solutions of (i) an acid and (ii) a base in two separate beakers. She forgot to label the solutions, and litmus paper was not available in the laboratory. Since both the solutions are colourless, how will she distinguish between the two?
28. Write balanced chemical equations for the following chemical reactions:  
a) Hydrogen + Chlorine  $\rightarrow$  Hydrogen chloride  
b) Lead + Copper chloride  $\rightarrow$  Lead chloride + Copper  
c) Zinc oxide + Carbon  $\rightarrow$  Zinc + Carbon monoxide

**OR**

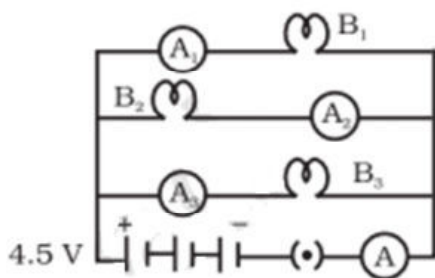
Suggest a method of reduction for the following metals during their metallurgical processes:

- i) metal 'A' which is one of the last, second or third position in the reactivity.  
ii) metal 'B' which gives vigorous reaction even with water and air.  
iii) metal 'C' which is kept in the middle of activity series.
29. a) In the process of respiration, state the function of alveoli.  
b) Rate of breathing in aquatic organisms is much faster than that in terrestrial organisms. Give reasons.  
c) Complete the following pathway showing the breakdown of glucose.



(ii)..... + H<sub>2</sub>O + Energy

30. Reproduction is essentially a phenomenon that is not for the survival of an individual but for the continuation of a species. Justify.
31. The absolute refractive indices of glass and water are 1.5 and 1.33 respectively. In which medium does light travel faster? Calculate the ratio of speeds of light in the two media.
32. B<sub>1</sub>, B<sub>2</sub> and B<sub>3</sub> are three identical bulbs connected as shown in the figure below. When all the three bulbs glow, a current of 3A is recorded by the ammeter A



- i) What happens to the glow of the other two bulbs when bulb B<sub>1</sub> gets fused?
- ii) What happens to the reading of A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub> and A when the bulb B<sub>2</sub> gets fused?
- iii) How much power is dissipated in the circuit when all three bulbs glow together?
33. What is solenoid? Draw the pattern of magnetic field lines of
- a current carrying solenoid and
  - a bar magnet.
- List two distinguishing features between the two fields.

#### Section-D(Each 5 Marks)

**Question No. 34 to 36 are long answer questions.**

34. i) By the transfer of electrons, illustrate the formation of bond in magnesium chloride and identify the ions present in this compound.

- ii) Ionic compounds are solids. Give reasons.
- iii) With the help of a labelled diagram show the experimental set up of action of steam on a metal.

**OR**

What is isomerism? Draw the structure for the following compounds:

- Ethanoic acid
  - Bromopentane
  - Butane
  - Hexanal
35. a) Write two water conducting tissues present in plants. How does water enter continuously into the root xylem?
- b) Explain why plants have low energy needs as compared to animals.

**OR**

- Name the organs that form the excretory system in human beings.
  - Describe in brief how urine is produced in human body.
36. A student is unable to see clearly the words written on the black board placed at a distance of approximately 3 m from him. Name the defect of vision the boy is suffering from. State the possible causes of this defect and explain the method of correcting it.

**OR**

Name the three common defects of vision. What are their causes? Name the type of lens used to correct each of them.

#### SECTION - E (Each 4 marks)

**Question No. 37 to 39 are case-based/data based questions with 2 to 3 short sub-parts. Internal choice is provided in one of these sub-parts.**

37. **Read the following paragraph and answer the following question**

When fats and oils are oxidized, they become rancid and their smell and taste change. Usually substances which prevent oxidation (antioxidants) are added to foods containing fats and oil. Keeping food in air tight containers helps to slow down oxidation.

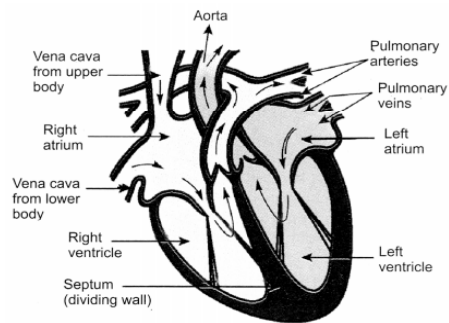
- i) What do you mean by the word rancidity? 1
- ii) Write any three methods to prevent rancidity. 2

**OR**

What is the meaning of antioxidants. Give an example.

- iii) Which gas is filled in the chips packets to keep them crunchy?

**38. Observe the figure and answer the following questions.**



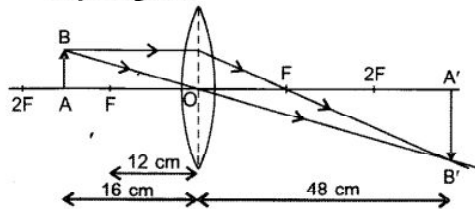
- i) Name the part which receives deoxygenated blood from vena cava. 1
- ii) Name the part which sends deoxygenated blood to lung through pulmonary artery 1
- iii) Define double circulation 2

**OR**

- a) Which vein carry oxygenated blood?
- b) Write the fuction of capillary.

**39. Observe the figure and answer the following question**

**Ray diagram:**



- i) What is the position of the object? 1
- ii) What is the position of the image? 1
- iii) What is the nature of the image? What is the difference between real and virtual image? 2

**OR**

What is the focus in convex lens?

\* \* \*