Techior Solutions Pvt. Ltd.

CBSE X Science Paper

Total Time: 3 Hr | Total Marks: 80.0

Science

MCQ Single Correct (1 Marks) **20 × 1=20**

1) Assertion (A) : Anodising is a method to prevent metal from corrosion.
Reason (R) : Anodising is a process of coating iron with a layer of zinc. **1**

A) Both A and R are true and R is the correct explanation of A
B) Both A and R are true but R is not the correct explanation of A
C) A is true but R is false
D) A is false but R is true

2) Which of the following salts is used in making plaster of Paris? **1**

A) Sodium chloride
B) Calcium sulfate
C) Sodium carbonate
D) Potassium nitrate

3) A solution reacts with crushed egg-shells to give a gas that turns lime water milky. The solution contains **1**

A) NaCl
B) HCl
C) LiCl
D) KCl

4) Choose the correct chemical formula for plaster of Paris **1**

A) $CaSO_4.\ 5H_2O$
B) $CaSO_4.\ 1/2\ H_2O$
C) $CuSO_4.\ 3/2\ H_2O$
D) $CuSO_4.\ 3H_2O$

5) Which of the following groups contain only biodegradable items? **1**

A) Grass, flowers and leather
B) Grass, wood and plastic
C) Fruit peels, cake and lime juice
D) Cake, wood and grass

6) Which of the following is NOT a consequence of global warming? **1**

A) Rising sea levels
B) Increased frequency of extreme weather events
C) Decreased melting of polar ice caps
D) Changes in precipitation patterns

7) Assertion : Most of the living organisms carry out aerobic respiration. **1**
Reason: Mitochondria is the site of aerobic respiration in the cell.

A) Both A and R are true and R is the correct explanation of A
B) Both A and R are true but R is not the correct explanation of A
C) A is true but R is false
D) A is false but R is true

8) The human eye forms the image of an object at its **1**

A) cornea
B) iris
C) pupil
D) retina

9) Assertion : In humans, male (or father) is responsible for sex of the baby which is born. **1**
Reason: Y chromosomes are present in only male gametes or sperms.

A) Both A and R are true and R is the correct explanation of A
B) Both A and R are true but R is not the correct explanation of A
C) A is true but R is false
D) A is false but R is true.

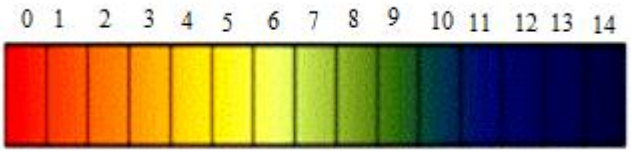
10) The oxides of which element can turn the litmus solution red **1**

A) Phosphorus and Sulphur
B) Lithium and sodium
C) Carbon and hydrogen
D) Potassium and copper

11) How much heat is required to be produced per second if the potential difference across a 5Ω resistor is 25V, and 5A current passing through it? **1**

A) 100 Joules
B) 150 Joules
C) 106 Joules
D) none of the above

12) In the pH paper which substance will indicate pH level 10 **1**



A) Tomato juice
B) Milk of Magnesia
C) Sodium Hydroxide solution
D) Coffee

13) Assertion (A): Zinc becomes dull in moist air. **1**
Reason (R) : Zinc is coated by a thin film of its basic carbonate in moist air.

A) Both A and R are true and R is the correct explanation of A
B) Both A and R are true but R is not the correct explanation of A
C) A is true but R is false
D) A is false but R is true

14) Assertion (A) : In anaerobic respiration, one of the end product is alcohol. **1**
Reason (R) : There is an incomplete breakdown of glucose.

A) Both A and R are true and R is the correct explanation of A
B) Both A and R are true but R is not the correct explanation of A
C) A is true but R is false
D) A is false but R is true

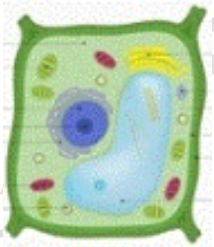
15) The breakdown of pyruvate to give carbon dioxide, water and energy take place in **1**

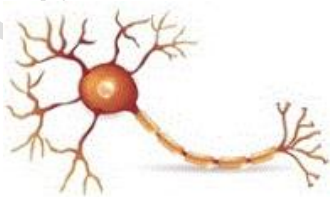
A) cytoplasm
B) mitochondria
C) chloroplast
D) nucleus

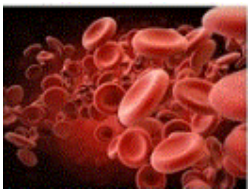
16) Assertion (A): Chips manufacturers usually flush bags of chips with gas such as nitrogen to prevent the chips from getting oxidised. **1**
Reason (R): This increase the taste of the chips and helps in their digestion.

A) Both A and R are true and R is the correct explanation of A
B) Both A and R are true but 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) Which is the following is a nerve cell? **1**

A) 

B) 

C) 

D) None of these

18) Which one of the below-mentioned personalities have proposed the theory of evolution? **1**

A) George Mendel
B) Charles Darwin
C) Stanley miller
D) Lamarck

19) Light travels in **1**

A) Curved lines
B) Straight Lines
C) Both a and b
D) None of the above

20) A person who can see the nearby objects clearly but the far away objects seem to be blurry is suffering from **1**

A) Myopia
B) Hypermetropia
C) Presbyopia
D) None of the above

Short Answer Questions (2 Marks) **$6 \times 2 = 12$**

21) An element X forms two oxides XO and XO_2. The oxide XO has no action on litmus solution but oxide XO_2 turns litmus solution red. **2**

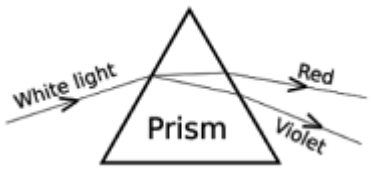
(a) What is the nature of oxide XO ?

(b) What is the nature of oxide XO_2 ?

(c) Would you call element X a metal or a non-metal? Give reason for your choice.

(d) Can you give an example of element like X ?

22) **2**



A student observes the above phenomenon in the lab as a white light passes through a prism. Among many other colours, he observed the position of the two colours Red and Violet.

What is the phenomenon called? What is the reason for the violet light to bend more than the red light?

23) Differentiate a real image from a virtual image giving two points of difference. **2**

---OR---

When a light ray passes from air into glass, what happens to its speed ? Draw a diagram to show which way the ray of light bends.

24) What is multiple fission ? How does it occur in an organism ? Explain briefly. Name one organism which exhibits this type of reproduction. **2**

---OR---

Reproduction is linked to stability of population of a species. Justify the statement.

25) What causes movement of food inside the alimentary canal? **2**

26) A vacuum cleaner draws a current of 2 A from the mains supply. **2**

(a) What is the appropriate value of the fuse to be fitted in its circuit ?

(b) What will happen if a 13 A fuse is fitted in its circuit ?

Short Answer Questions (3 Marks) **$7 \times 3 = 21$**

27) How is a normal eye able to see distinctly distant as well as nearer objects ? What is the distance of distinct vision ? **3**

28) (a) Define (i) principal focus of a concave mirror, and (ii) focal length of a concave mirror. **3**

(b) Draw diagram to represent the action of a concave mirror on a beam of parallel light rays. Mark on this diagram principal axis, focus F, centre of curvature C, pole P and focal length f, of the concave mirror.

29) A 2.0 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 10 cm. The distance of the object from the lens is 15 cm. Find the nature, position and size of the image. Also find its magnification. **3**

30) Explain in brief the reason for each of the following: **3**

(a) Advanced sun-rise

(b) Delayed sun-set

(c) Twinkling of stars

31) Write three different chemical reactions showing the conversion of ethanoic acid to sodium ethanoate. Write balanced chemical equation in each case. Write the name of the reactants and the products other than ethanoic acid and sodium ethanoate in each case. **3**

32) Write the name and general formula of a chain of hydrocarbons in which an addition reaction with hydrogen can take place. Stating the essential conditions required for an addition reaction to occur. **3**

---OR---

What is meant by homologous series of carbon compounds? Write the general formula of (i) alkenes, and (ii) alkynes. Draw the structures of the first member of each series to show the bonding between the two carbon atoms.

33) How do Mendel's experiments show that traits may be dominant or recessive ? **3**

Long Answer Questions (5 Marks) **$3 \times 5=15$**

34) Match the following pH values 1, 7, 10, 13 to the solutions given below: **5**

• Milk of magnesia

• Gastric juices

• Brine

• Aqueous Sodium hydroxide.

Amit and Rita decided to bake a cake and added baking soda to the cake batter.

Explain with a balanced reaction, the role of the baking soda. Mention any other use of baking soda.

---OR---

Explain the process of neutralization with an example.

35) A metal X which is resistant to corrosion is produced by the electrolysis of its molten oxide whereas another metal Y which is also resistant to corrosion is produced by the reduction of its oxide with carbon. Metal X can be used in powder form in termite welding whereas metal Y is used in making cathodes of ordinary dry cells. **5**

(a) Name the metals X and Y.

(b) Which of the two metals is more reactive : X or Y ?

(c) Name one ore or metal X. Also write its chemical formula.

(d) Name one ore of metal Y. Also write its chemical formula.

(e) Name one alloy of metal X and one alloy of metal Y.

---OR---

(a) Write down the electron arrangement in (i) a magnesium atom, and (ii) a chlorine atom.

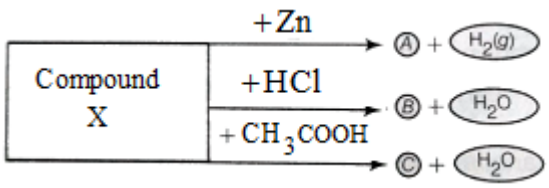
(b) How many electrons are there in the valence shell of (i) a magnesium atom, and (ii) a chlorine atom ?

(c) Show the formation of magnesium chloride from magnesium and chlorine by the transfer of electrons.

(d) State whether magnesium chloride will conduct electricity or not. Give reason for your answer.

(e) Why are covalent compounds generally poor conductors of electricity ?

36) Identify the compound X on the basis of the reactions given below. Also, write the name and chemical formulae of A, B and C. **5**



---OR---

A salt X when dissolved in distilled water gives a clear solution which turns red litmus blue. Explain the phenomenon.

Solve Question 37 to Question 40 based on the following paragraph:

Read the following passage and answer the questions:

Almost all metals combine with oxygen to form metal oxides.

Metal + Oxygen → Metal oxide

For example, when copper is heated in air, it combines with oxygen to form copper(II) oxide, a black oxide.

$2Cu + O_2 \rightarrow 2CuO$

(Copper) (Copper(II) oxide)

Similarly, aluminium forms aluminium oxide.

37) What is the correct chemical equation **1**

(i) $Al_2O_3 + 2NaOH \rightarrow 2NAlO_2 + H_2O$

(ii) $4Al + 3O_2 \rightarrow 2Al_2O_3$

A) Both (i) and (ii)

B) Only (i)

C) Only (ii)

D) Neither (i) and Nor (ii)

38) Which one among the following as an acidic oxide. **1**

A) Na_2O

B) CO

C) CO_2

D) Al_2O_3

39) Complete the given chemical equation. **1**

$Al_2O_3 + 6HCl \rightarrow$ _____ $+ 3H_2O$

A) $AlCl_3$

B) $AlCl_4$

C) $2AlCl_3$

D) None

---OR---

Metal oxides which react with both acid and base and produce salts and water is known as

A) Amphoteric Oxides

B) Metallic Oxides

C) Non-Metallic Oxides

D) None

40) Metal oxides which react with both acid and base and produce salts and water is known as **1**

A) Amphoteric Oxides

B) Metallic Oxides

C) Non-Metallic Oxides

D) None

Solve Question 41 to Question 44 based on the following paragraph:

Case Study 1:

Read the following passage and answer the questions:

In any given ecosystem, all living organisms are linked in a systematic chain with respect to their mode of manufacturing food/ feeding habits. This sequential interlinking of organisms involving transfer of food energy from producers through a series of organisms with repeated eating and being eaten is called the food chain. A food chain may have 3-4 trophic levels.

41) Consider the following food chain **1**

Grass $\rightarrow$A $\rightarrow$ Frog $\rightarrow$ Snake $\rightarrow$ Eagle

Which of the following can be placed at A?

A) Grasshopper

B) Rabbit

C) Phytoplankton

D) Rat

42) Which of the following statements regarding food chain is incorrect? **1**

A) It is a single straight pathway through which food energy travels in the ecosystem

B) It adds adaptability and competitiveness to the organisms

C) Presence of isolated food chains adds to instability of the ecosystem

D) Food chain binds up inorganic nutrients of the ecosystem

43) Select the option that incorrectly matches the type of solid waste and its correct disposal system **1**

A) Plastic bottle – send for recycling

B) Used tea leaves and kitchen waste – Collect in a pit to form compost

C) Used syringes and needle – Wash and reused

D) Municipal solid waste and fecal sludge – Buried in low lying areas to level uneven surface of land

---OR---

Teacher kept few solid wastes in her class as given

Jute bag (I), Tube light (II), Aluminium foil (III) Paper cup (IV), Fruits (V), Glass tumbler (VI), Hedge trimming (VII), plastic bag (VIII), Metal keys (IX), DDT (X)

She asked students to arrange them in group A (Biodegradable) and group B (Non-biodegradable). Select the student that has grouped the items correctly.

A) Tarun – Group A: I, IV, V, VII

Group B: II, III, VI, VIII, IX, X

B) Shivani – Group A : I, III, V, VII, X

Group B : II, IV, VI, VIII, IX

C) Neha – Group A : II, III, IV, V, IX

Group B: I, VI, VII, VIII, X

D) Advait – Group A : I, III, IV, V, X

Group B: II, VI, VII, VIII, X

44) Teacher kept few solid wastes in her class as given **1**

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Group B : II, IV, VI, VIII, IX

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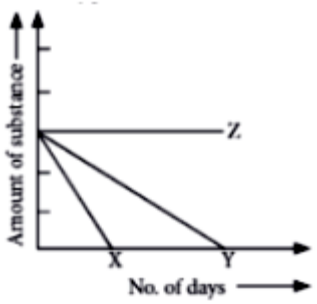
Group B: I, VI, VII, VIII, X

D) Advait – Group A : I, III, IV, V, X

Group B: II, VI, VII, VIII, X

---OR---

Given graph shows time taken by different types of materials to decompose.



Which of the following substances could be a non-biodegradable material?

A) X

B) Y

C) Z

D) None of these

Solve Question 45 to Question 48 based on the following paragraph:

Read the following passage and answer the questions:

Mass can neither be created nor destroyed in a chemical reaction. That is, the total mass of the elements present in the products of a chemical reaction has to be equal to the total mass of the elements present in the reactants.

45) Check whether these statements are correct or not? **1**

(I) The number of atoms of each element remains the same, before and after a chemical reaction.

(II) Every chemical reaction follows the law of conservation of mass.

A) Only statement (I) is correct

B) Only statement (II) is correct

C) Both the statement (s) correct

D) Neither statement (I) nor statement (II) is correct

46) Find the product of equation: **1**

$CO + 2H_2 \rightarrow$ _____

A) CH_3OH

B) C_2H_5OH

C) $CH_4 + O_2$

D) None

---OR---

What is the correct balancing equation?

A) $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$

B) $Zn + 2H_2SO_4 \rightarrow ZnSO_4 + H_2$

C) $2Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$

D) None

47) What is the correct balancing equation? **1**

A) $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$

B) $Zn + 2H_2SO_4 \rightarrow ZnSO_4 + H_2$

C) $2Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$

D) None

48) Which of the following does not involve a chemical reaction? **1**

A) Digestion of food in our body

B) Process of respiration

C) Burning of candle wax when heated

D) Melting of candle wax on heating