

RYAN GROUP OF SCHOOLS
ACADEMIC YEAR 2023-24
CBSE, PRE-BOARD-2 EXAMINATION



STD : X

MARKS : 80

SUB : SCIENCE (SET-A)

TIME : 3 HRS.

General Instructions:

- i. The 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 Questions carrying 2 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. Answers 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 4 marks each.**

SECTION - A : 1 MARKS FOR EACH QUESTION

- Q.1** Heating of ferrous sulphate is a type of:
- a) Decomposition reaction b) Displacement reaction
c) All of these d) Combination Reaction
- Q.2** Which of the following are combination reactions?

- i.** $2\text{KClO}_3 \xrightarrow{\text{Heat}} 2\text{KCl} + 3\text{O}_2$
- ii.** $\text{MgO} + \text{H}_2\text{O} \rightarrow \text{Mg}(\text{OH})_2$
- iii.** $4\text{Al} + 3\text{O}_2 \rightarrow 2\text{Al}_2\text{O}_3$
- iv.** $\text{Zn} + \text{FeSO}_4 \rightarrow \text{ZnSO}_4 + \text{Fe}$

- a) (ii) and (iii) b) (i) and (iii)
c) (iii) and (iv) d) (ii) and (iv)
- Q.3 Baking powder is a mixture of:
a) Sodium hydrogen carbonate and tartaric acid
b) Sodium carbonate and tartaric acid
c) hydrogen carbonate and acetic acid
d) Sodium carbonate and acetic acid
- Q.4 Acetic acid, when dissolved in water, dissociates into ions reversibly because it is:
a) Weak base b) Strong base
c) A weak acid d) Strong acid
- Q.5 Exchange of genetic material takes place in
a) Vegetative reproduction b) asexual reproduction
c) sexual reproduction d) budding
- Q.6 Which of the following are not ionic compounds?
i. KCl ii. HCl
iii. CCl₄ iv. NaCl
a) (ii) and (iii) b) (i) and (iii)
c) (i) and (ii) d) (iii) and (iv)
- Q.7 Which of the following are exothermic processes
i. Reaction of water with quick lime
ii. Dilution of an acid
iii. Evaporation of water
iv. Sublimation of camphor
a) i and ii b) ii and iii
c) i and iv d) iii and iv
- Q.8 The movement of sunflower in accordance with the path of sun is due to
a) hydrotropism b) chemotropism
c) phototropism d) geotropism
- Q.9 A molecule of ammonia (NH₃) has
a) two double bonds and one single bond
b) only double bonds
c) only single bonds
d) triple bond and single bonds

- Q.10 A factor not affecting photosynthesis is
- Carbon dioxide concentration in air
 - Temperature
 - Light intensity
 - Wind velocity
- Q.11 A cross between a tall plant (TT) and short pea plant (tt) resulted in progeny that were all tall plants because
- height of pea plant is not governed by gene 'T' or 't'
 - tallness is the recessive trait
 - shortness is the dominant trait
 - tallness is the dominant trait
- Q.12 When a 4Ω and 2Ω resistors are connected in series, the equivalent resistance will be:
- $>6\Omega$
 - 6Ω
 - $<2\Omega$
 - $<4\Omega$
- Q.13 Magnetic field can
- change the momentum of a moving charged particle
 - change the speed of a moving charged particle
 - create an electric field
 - create a gravitational field
- Q.14. Which of the following describes the common domestic power supplied in India?
- 110v,100Hz
 - 220v,100Hz
 - 110v,50Hz
 - 220v,50Hz
- Q.15 The direction of force acting on a current carrying conductor placed in a magnetic field can be obtained by:
- Fleming's right hand rule.
 - Ampere's swimming rule.
 - Fleming's left hand rule.
 - Clock face rule
- Q.16 In spirogyra asexual reproduction takes place by
- Regeneration
 - Budding
 - Spore formation
 - Fragmentation

Instruction:-

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

Q.17 **Assertion (A):** Carbohydrate digestion mainly takes place in the small intestine

Reason (R): Bile juice mix with food in small intestine.

Q.18 **Assertion (A):** The sex of a child is determined by the mother.

Reason (R): Humans have two types of sex chromosomes: XX and XY in female and male, respectively.

Q.19 **Assertion (A):** A compass needle is placed near a current carrying wire, the deflection of the compass needle decreases when the magnitude of the electric current in the wire is increased.

Reason (R): Strength of the magnetic field at a point near the conductor increases on increasing the current.

Q.20 **Assertion (A):** Carbon dioxide turns lime water milky.

Reason (R): Carbon dioxide sullies the water.

SECTION - B : 2 MARKS FOR EACH QUESTION

Q.21 The electronic configurations of four particles A, B, C and D are given below:

A - 2, 8, 8

B - 2, 8, 2

C - 2, 6

D - 2, 8

Which electronic configuration represents:

i. magnesium atom

ii. oxygen atom

iii. sodium ion

iv. chloride ion

OR

What is aquaregia? Give its property.

Q.22 Stomata remains closed in desert plants during daytime. How do they photosynthesize?

OR

State the role of pepsin and lipase in the process of digestion.

- Q.23 What is "translocation"? Does it help of removal of waste from plant?
- Q.24 Show diagrammatically representation of reflex arc?
- Q.25 Reena was diagnosed with a short-sighted problem. Draw diagram for its correction?
- Q.26 How does biological magnification effect organisms belonging different tropic level particularly tertiary consumers?

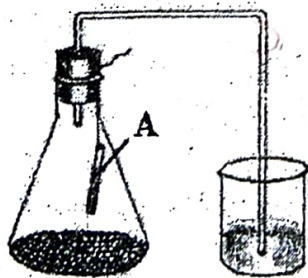
SECTION - C : 3 MARKS FOR EACH QUESTION

- Q.27 Write the balanced chemical equation for the following reaction:
- Phosphorus burns in presence of chlorine to form phosphorus penta chloride.
 - Burning of natural gas.
 - The process of respiration
- Q.28 State and explain any three properties of ionic compounds?

OR

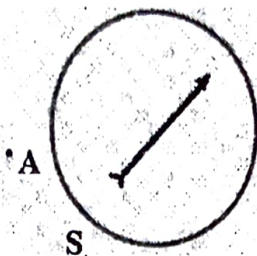
Distinguish between calcination and roasting? Support your answer with the help of a chemical equation?

- Q.29 The diagram given below is the experiment set-up of show that carbon dioxide is given out during respiration. In this set-up what does test tube marked (A) contain? What is its role in the experiment?



- Q.30 Distinguish between real image and virtual image. Give three points of difference between real image and virtual image.
- Q.31 The refractive indices 1.0003, 1.31, 1.5 respectively of Air, Ice and Benzene. In which of these does the light travels fastest? Also give reasons for the same.

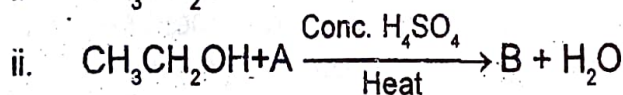
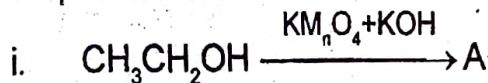
- Q.32 Differentiate between food chain and food web with the help of an example?
- Q.33 A magnetic compass needle is placed in the plane of paper near point A as shown in the figure.



- In which plane should a straight current-carrying conductor be placed so that it passes through A and there is no change in the deflection of the compass?
- Under what condition is the deflection maximum and why?

SECTION - D :5 MARKS FOR EACH QUESTION

- Q.34 Identify the compounds A to E in the following reaction sequence. (1x5)



- Q.35 In the female reproductive system of human beings, state the function of

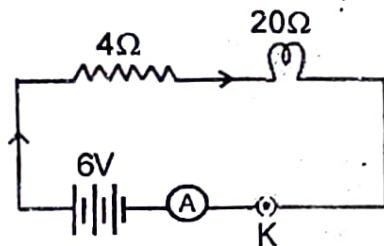
- Ovary and Oviduct (2)
- Mention the changes which the uterus undergoes when
 - When it has to receive a Zygote (1)
 - No fertilization takes place
- State the importance of placenta? (2)

OR

- a) Draw a diagram showing germination of pollen on stigma of a flower and mark on it the following parts. (3)
- | | |
|-----------------|-----------------------|
| i. Pollen grain | ii. Pollen tube |
| iii. Stigma | iv. Female germ cells |
- b) Significance of Pollen tube. (1)
- c) Name of parts of a flower that develop after fertilization into (1)
- | | |
|---------|-----------|
| i. Seed | ii. Fruit |
|---------|-----------|

Q.36 An electric lamp of resistance 20 and a conductor of resistance 4 are connected to a 6 V battery as shown in the circuit. Calculate

- a) the total resistance of the circuit,
 b) the current through the circuit,
 c) the potential difference across the
 (i) electric lamp and
 (ii) conductor, and
 d) power of the lamp.

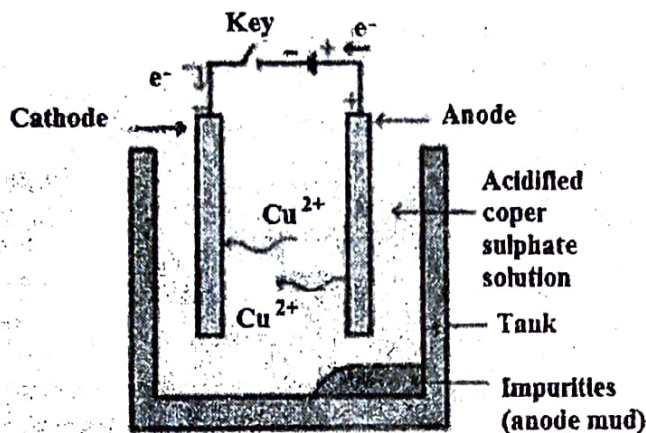


OR

What is resistance ? Give it's SI unit? Explain the factors effecting resistance of a conductor? (1+1+3=5)

SECTION - E: 4 MARKS FOR EACH QUESTION

- Q.37 Read the following and answer any four questions:
 In the electrolytic refining of copper. The electrolyte is a solution of acidified copper sulphate. There are an anode and cathode. Refining is carried out by passing an electric current.



- i. The anode is _____ (1)
- a) pure strips b) impure copper
c) refined copper d) none of these
- ii. Anode mud consists of: (1)
- a) insoluble impurities b) soluble impurities
c) pure metal d) impure metal
- iii. 1) Which of the following are refined electrolytically: (1)
- (A) Au, (B) Cu, (C) Zn, (D) K
- a) A and B b) B and C
c) A, B and C d) B, C and D
- 2) On passing electric current Cu is deposited on: (1)
- a) cathode b) anode
c) bottom of cathode d) bottom of anode

OR

Define electrolysis. (2)

Q.38 Read the Case study followed by 3 questions

Part (i) and (ii) are compulsory. However, an internal choice has been provided in part (iii):

Refer to the given table regarding results of F_2 generation of Mendelian cross.

Plants with round and yellow coloured seeds	315
Plants with round and green coloured seeds	108
Plants with wrinkled and yellow coloured seeds	101
Plants with wrinkled and green coloured seeds	32

- i. What would be the phenotype of F_1 generation regarding given data of F_2 generation? (1)
- ii. What would be the genotype of parental generation regarding the given result of F_2 generation? (1)
- iii. If a plant with wrinkled and green coloured seeds is crossed with the plant having wrinkled and yellow coloured seeds, what will be the probable phenotype of offsprings? (2)

OR

What will result when plant $YyRr$ is self-pollinated? (2)

Q.39 Read the following and answer any four questions:

A transparent material bound by 2 surfaces of which one or both surfaces are spherical, forms a lens may have 2 spherical surfaces, bulging outward or curved inward. Such a lens is called the double concave or convex lens. A lens may be a convex lens or a concave lens.

- i. When an object is kept at any distance in front of a concave lens, the image formed is always: (1)
 - a. virtual, erect and magnified
 - b. virtual, erect and diminished
 - c. virtual, inverted and diminished
 - d. virtual, erect and same size of the object
- ii. Which of the following can form a virtual image which is bigger than the object? (1)
 - a. a concave lens
 - b. a convex lens
 - c. a plane mirror
 - d. a concave mirror
- iii. Define 1 dioptre of power of a lens. (2)

OR

Find the power of a concave lens of focal length 2m. (2)
