



BK BIRLA CENTRE FOR EDUCATION  
SARALA BIRLA GROUP OF SCHOOL  
SENIOR SECONDARY CO-ED DAY CUM BOYS' RESIDENTIAL SCHOOL  
PRE-BOARD-III 2024-25  
SCIENCE MARKING SCHEME (086)



Class: X  
Date: 25/01/2025

Duration: 3 Hr.  
Max. Marks: 80

SECTION A

- |    |  |   |
|----|--|---|
| 1  | (A) 1 and 4  | 1 |
| 2  | (B) (ii) and (iii)   | 1 |
| 3  | (D) 2  | 1 |
| 4  | (A) Water < Acetic acid < Hydrochloric acid  | 1 |
| 5  | (D) Y is a non-metal and Z is a metal  | 1 |
| 6  | (C) Basic Copper carbonate   | 1 |
| 7  | (A) Addition reaction  | 1 |
| 8  | (C). (i) (4), (ii) (2), (iii) (1), (iv) (3)  | 1 |
| 9  | (C) (iii) and (iv)   | 1 |
| 10 | (C) 2 only   | 1 |
| 11 | B. girl  | 1 |
| 12 | B. synapse   | 1 |
| 13 | D. $v = +5$ cm, $f = +10$ cm and $h_i = +7.5$ cm   | 1 |
| 14 | C. Real and inverted   | 1 |
| 15 | C. 220 V, 50 Hz  | 1 |
| 16 | C. Primary consumer to secondary consumer<br>Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R).<br>Answer these questions by selecting the appropriate option given below:<br>Both A and R are true, and R is the correct explanation of A.<br>Both A and R are true, and R is not the correct explanation of A.<br>A is true but R is false.<br>A is false but R is true | 1 |
| 17 | A. Both A and R are true, and R is the correct explanation of A.   | 1 |
| 18 | A. Both A and R are true, and R is the correct explanation of A.   | 1 |

- 19 A. Both A and R are true, and R is the correct explanation of A. 1
- 20 A is false but R is true 1

Section-B

Questions No. 21 to 26 are very short answer questions

- 21 (a) Reduced  $\text{Fe}_2\text{O}_3$  Al is oxidised 2  
(b)  $\text{PbO}$  is reduced C is oxidised
- 22 Fatty Foods should be avoided because the liver produces bile to digest fats, and a diseased liver may not produce enough bile, leading to indigestion and fat accumulation. Highly Acidic Foods should be avoided as they can irritate the digestive system and increase acidity, putting additional stress on the liver. 2
- 23 A. i) Blood sugar level is regulated by the hormones insulin by feedback mechanism. 2  
ii) Pancreas.

OR

B. (i) Adrenaline hormone.  
Adrenal glands.

(ii) Adrenaline helps the body cope in emergencies by:

Increasing heart rate and blood pressure to supply more oxygen to muscles.

Boosting glucose release into the bloodstream for instant energy.

Enhancing breathing rate to increase oxygen intake.

Preparing muscles for a "fight-or-flight" response.

- 24 A. The refractive index is the measure of bending of a light ray when passing from one medium to another. It can also be defined as the ratio of the velocity of a light ray in an empty space to the velocity of light in a substance,  $n = c/v$ . 2  
B. Diamond,  $n=c/v$

- 25 1. P 2  
2. To the metallic part of electric iron.  
3. A. The green wire is a protective wire called earthing.  
OR  
B. 1. Live and Neutral  
2. Increases rapidly due to less resistance.
- 26 In summary, the relationships observed are: In Experiment 1, magnetic field strength increases linearly with an increase in current. In Experiment 2, magnetic field strength decreases inversely with an increase in the radius of the coil. 2

Section-C

Questions No. 27 to 33 are short answer questions

- 27 (a) suffocating gas and brown coloured substance are formed.  
 (b) Decomposition reaction  
 (c)  $2\text{FeSO}_4 \rightarrow \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3$

28 A)

- (i)  $\text{CaCl}_2$  'C'. Bleaching powder  
 (ii)  $\text{Ca}(\text{OH})_2 + \text{Cl}_2 \rightarrow \text{CaOCl}_2 + \text{H}_2\text{O}$   
 (iii) Bleaching powder and Calcium oxy chloride

OR

B)

- (a) Calcium hemihydrate  $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$   
 (b)  $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O} + \frac{3}{2}\text{H}_2\text{O} \rightarrow \text{CaSO}_4 \cdot 2\text{H}_2\text{O}$   
 (c) Statue and Joining cracked bones

- 29 a) The numerous alveoli provide a large surface area for efficient gas exchange. 3  
 Their single-cell thick walls allow rapid diffusion of gases between the air and blood.  
 b) The rate of breathing in aquatic organisms is much faster than in terrestrial organisms because: Lower Oxygen Availability in Water and Slow Diffusion Rate of Oxygen in Water:  
 c) i) Pyruvate ii)  $\text{CO}_2$

- 30 (i) Auxin 3  
 (ii) Stimulus-gravity, Geotropism  
 (iii) Auxin regulates the directional growth of shoots by influencing cell elongation in response to light

- 31 (i) The cornea's main function is to focus light onto the retina at the back of the 3 eye, which allows for clear vision:  
 (ii) The pupil's function is to regulate the amount of light that enters the eye, allowing light to pass through to the retina  
 (iii) Retina: It is a light-sensitive layer that consists of numerous nerve cells. It converts images formed by the lens into electrical impulses. These electrical impulses are then transmitted to the brain through optic nerves.

- 32 (i) uniform  
 (ii) current, length of coil (  
 (iii) Fleming's left hand rule: Stretch the forefinger, middle finger and the thumb of your left hand mutually perpendicular to each other. If the forefinger indicates the direction of magnetic field and the middle finger indicates the direction of current, then the thumb will indicate the direction of motion of the conductor.

- 33 a) 5 J  
 b) Ozone Layer: The ozone layer is a protective layer of ozone ( $\text{O}_3$ ) gas located in the stratosphere, approximately 15–35 km above Earth's surface. It absorbs and blocks harmful ultraviolet (UV) radiation from the Sun, preventing it from reaching the Earth's surface. This protects living organisms from UV-induced damage like skin cancer. Chlorofluorocarbons (CFCs) Found in refrigerants are responsible for its depletion.

Section D

Question No. 34 to 36 are long answer questions.

34 A)

- C is Ethanoic Acid  $\text{CH}_3\text{COOH}$   
 R is sodium Ethanoate  $\text{CH}_3\text{COONa}$   
 A Ethanol  $\text{CH}_3\text{CH}_2\text{OH}$

S is Ester  $\text{CH}_3\text{CH}_2\text{COOC}_2\text{H}_5$

Ethanol + Ethanoic Acid  $\rightarrow$  Ester and  $\text{H}_2\text{O}$

OR

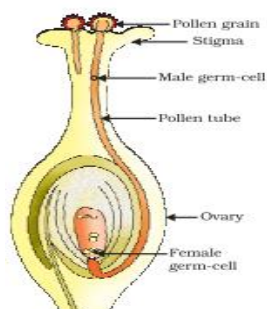
- a) Y. Ethanoic Acid  $\text{CH}_3\text{COOH}$
- b) Lime water test
- c) Ethanol and Ester
- d) Esterification

Used in Perfumes sweet making

35 Attempt either option A or B.

A. (i) Pollination-transfer of pollen from the anther to stigma and fertilization is the fusion of male and female gamete leading to the formation of zygote.

Site of fertilization is ovule/ovary. Product of fertilisation in a flower is embryo/seed.



(ii) OR

B. (i) Path of Sperm: Testes  $\rightarrow$  Vas Deferens  $\rightarrow$  Urethra

Glands and Their Functions: Seminal Vesicles and Prostate gland: Secrete a fluid, providing energy for sperm and enhancing sperm motility.

(ii) The endometrial lining of the uterus, which thickened to support implantation, breaks down. The blood vessels rupture, resulting in menstrual bleeding (menstruation)

(iii) The uterine wall thickens further and becomes highly vascularized to supply nutrients and oxygen to the growing embryo.

The placenta begins to form, facilitating nutrient and waste exchange between the mother and the embryo.

36 A. (i) Length and area of cross section

(ii) X- Ammeter and Y- Volt meter.

(iii)  $(6 * 6 / 12) + 2 = 36 / 12 + 2 = 3 + 2 = 5 \text{ Ohm}$

(iv) current in the circuit.,  $I = 6 / 5 = 1.2 \text{ A}$ . the unit is Ampere

OR

B. (i) Drawing of V-I graph.

(ii) The resistance of the resistor  $R = V / I = 3.4 / 1 = 3.4 \text{ Ohm}$  (approx).

37 Attempt either subpart B or C.

In an investigation, metals A, B, C and D are added to different solutions. The observations are shown in Table;

OR

A) Blue color changed

B) B, A C D

OR

Q and R Because Zn is more reactive than Fe and Cu.

38 Attempt either subpart A or B.

A. Monohybrid Cross.

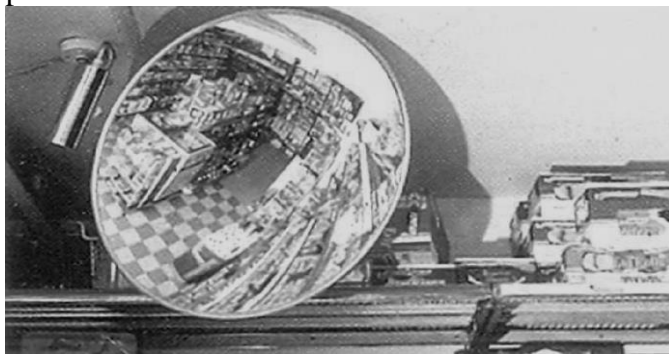
OR

B. AO and BO parents can have all the four possible genotypes- AO,BO, AB, O  
 C. A plant having red coloured flowers when crossed with the other having the same colour produced 40 progenis out of which 30 plants were with red coloured flowers, 10 plants were with white colour flowers. Find out:

- (i) Rr and Rr
- (ii) Red is dominant and white is recessive.
- (iii) 1:2:1

39 Attempt either subpart C or D

Rajesh's father Mr. Jayesh runs a cosmetics and perfumes shop in a crowded market place. Mr. Jayesh i usually complains at home that there is lot of 'shop- lifting' in his shop which was causing loss to him. Rajesh used to hear such complaints of his father. One day Rajesh went to the market and purchased one big mirror of a special kind. He then went to his father's shop and fixed the mirror at strategic positions inside the shop as shown in the figure. Mr. Jayesh found that after the installation of the mirror, the shop-lifting almost stopped. He was very happy and thanked Rajesh for making this possible.



A. Convex

B.

Diminished	
Upright	
Virtual	

C.

iii) b and d both

D.

(iii) no change

\*\*\*\*\*Best of Luck\*\*\*\*\*