



Date:15-09-2023
GRADE: X

Term 1 (2023-24)
SCIENCE (086)

Max marks : 80
Time: 3 hours

Marking Scheme

Section-A		
Qn. No	Answers	Marks
1	c)decomposition	1
2	b)silver coated on copper	1
3	c)Zn	1
4	c)Mg and CuSO ₄	1
5	b)Mg	1
6	b)slaked lime	1
7	a)sugar	1
8	(c) peristaltic movement	1
9	(a) positively geotropic	1
10	(d) Medulla oblongata	1
11	a) tongue	1
12	c) lack of oxygen and formation of lactic acid.	1
13	a) 0°	1
14	b) Behind the observer	1
15	a and c. Pb reduced,CO ₂ oxidised	1
16	(a) Tubule	1
	Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R).	

	<p>Answer these questions selecting the appropriate option given below:</p> <p>(a) Both A and R are true, and R is the correct explanation of A.</p> <p>(b) Both A and R are true, and R is not the correct explanation of A.</p> <p>(c) A is true but R is false.</p> <p>(d) A is false but R is true.</p>	
17	<p>Assertion(A): true</p> <p>Reason(R): true</p>	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	<p>Assertion(A): true</p> <p>Reason (R) : true and correct explanation</p>	1
Section-B		
21	$Al_2O_3 + HCl \rightarrow AlCl_3 + H_2O$ $Al_2O_3 + NaOH \rightarrow Na_2AlO_2 + H_2O$	2
22	<p>(a) Leaves provide large surface area for maximum light absorption.</p> <p>(b) Leaves are arranged at right angles to the light source in a way that causes overlapping for absorption of more light.</p> <p>(c) The extensive network of veins enables quick transport of substances to and from the mesophyll cells.</p> <p>(d) The presence of numerous stomata for gaseous exchange, which helps them to absorb more CO₂</p> <p>(e) The chloroplasts are more in number on the upper surface of leaves, as more light exposure on the upper surface.</p>	2
23	<p>a) The secretion of liver, called bile, breaks down the large globules of fat into smaller globules. This is called emulsification of fats. The bile also makes the medium alkaline so that the pancreatic enzyme, lipase, further digests fats to form fatty acids.</p> <p>b) Fats are digested in the small intestine.</p>	2
24	<p>i) The following are the laws of refraction of light. (i) The incident ray, the refracted ray and the normal to the interface of two transparent media at the point of incidence, all lie in the same plane. (ii) The ratio of sine of angle of incidence to the sine of</p>	2

angle of refraction is a constant, for the light of a given colour and for the given pair of media.

ii) Absolute refractive index = $3 \times 10^8 \text{ m/s} / 1.5 \times 10^8 \text{ m/s} = 2$

(i) the refraction for the light rays entering the eye occurs
 (ii) provides the finer adjustment of focal length required to focus objects at different distances on the retina.
 (iii) controls the size of the pupil.
 (iv) The pupil regulates and controls the amount of light entering the eye

OR

i) The splitting up of white light into its constituent colours on passing through a refracting medium like glass prism is called dispersion of light.

25

ii)

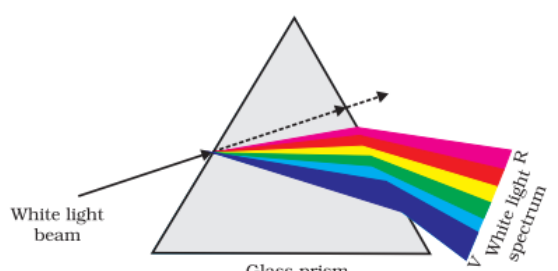


Figure 10.5 Dispersion of white light by the glass prism

2

In plants, waste products are removed by diffusion. Plants excrete oxygen, a product of photosynthesis. Plants get rid of water by transpiration. Waste products may be stored in vacuoles or may be stored in leaves which fall off. Resins and gums are stored in xylem which are harmless to trees. When the leaves and bark are shed, the wastes are eliminated.

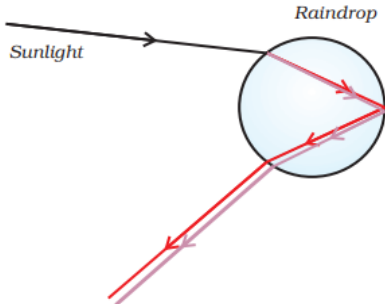
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Section-C

27	phenolphthaein		blue litmus	3
	HCl	no colour	red	
	Na ₂ CO ₃	pink	no change	

	NaCl	no colour	no change	
28	$\text{NaCl} + \text{CO}_2 + \text{H}_2\text{O} + \text{NH}_3 \rightarrow \text{NaHCO}_3 + \text{NH}_4\text{Cl}$ $\text{NaHCO}_3 + \text{HCl} \rightarrow \text{NaCl} + \text{CO}_2 + \text{H}_2\text{O}$			3
29	<p>Control and coordination of functioning of various systems is under the direct control of the nervous system. It is the nervous system which governs the way a particular organ or organ system has to work This control is achieved by a complex network of neurons which carry signals in the form of electric impulses; to and from the brain.</p> <p>The hormonal system, on the other hand, coordinates the functioning of the nervous system. The hormonal system has somewhat indirect control on various functions. It tells a system to either slow down or pace; according to the situation.</p> <p>Example: Under the stressed conditions, the nervous system acts upon the adrenal gland and makes it secrete the adrenaline hormone.</p>			3
30	<p>i) The reflex arc describes the pathway in which the nerve impulse is carried and the response is generated and shown by the effector organ.</p> <p>ii)</p> <pre> Stimulus (unwanted particle in the nose) → Nose receptor organ → Sensory nerve ↓ Spinal cord ↓ Sneezing (response) ← Motor nerve ← Spinal cord </pre>			3
31	<p>(i) Concave mirror: When the headlight bulb is placed at the principal focus of the concave mirror, it produces a strong forward beam consisting of parallel rays of light.</p> <p>(ii) Convex mirror: they always give an erect, though diminished, image. Also, they have a wider field of view</p> <p>(iii) Concave mirror: The concave mirror focuses parallel rays of light coming from the sun at the principal focus.</p>			3
32	<p>(i) $u = -10 \text{ cm}$ $f = 15 \text{ cm}$ $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$ $\frac{1}{v} = \frac{1}{f} - \frac{1}{u}$ $= \frac{1}{15} - \frac{1}{-10}$ $= \frac{1}{6}$ $v = 6 \text{ cm}$</p> <p>The image is formed behind the mirror.</p>			3

	nature: virtual and erect (ii) Plane mirror	
33	<p>A rainbow is a natural spectrum appearing in the sky after a rain shower. It is caused by dispersion of sunlight by tiny water droplets, present in the atmosphere. A rainbow is always formed in a direction opposite to that of the Sun. The water droplets act like small prisms. They refract and disperse the incident sunlight, then reflect it internally, and finally refract it again when it comes out of the raindrop. Due to the dispersion of light and internal reflection, different colours reach the observer's eye.</p> 	3

Section-D

34	<p>i) Ionic bond is formed when positive ion and negative ions are bonded by electrostatic force of attraction. ii) They have high melting point. They are good conductors of electricity. iii)</p> $\text{Mg}^{\times} + \begin{array}{c} \cdot\ddot{\text{Cl}}\cdot \\ \cdot\ddot{\text{Cl}}\cdot \end{array} \longrightarrow \left[\cdot\ddot{\text{Cl}}\cdot \right]^{-} \left[\text{Mg}^{+2} \right] \left[\cdot\ddot{\text{Cl}}\cdot \right]^{-}$ <p>Magnesium atom (2, 8, 2) Chlorine atom (2, 8, 7)</p>	5
35	<p>i)-Breathing is the physical process of exchanging gases -Respiration is a chemical process that takes place at a cellular level and produces energy -Breathing is the extracellular process -Respiration is the intracellular process.</p>	5

ii)a) Anaerobic respiration: This process involves the breakdown of glucose into a three-carbon molecule called pyruvate in the absence of oxygen and takes place in the cytoplasm. This pyruvate so produced can be converted into Lactic acid and energy

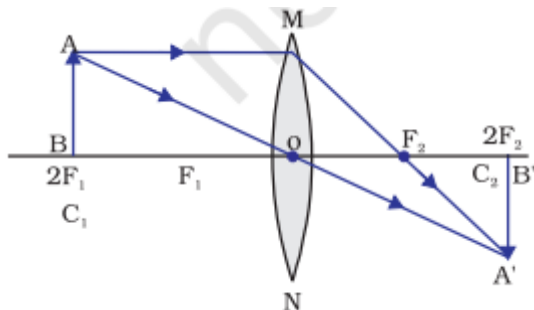
b) Aerobic respiration: During aerobic respiration (in the presence of oxygen), glucose is broken down into pyruvate and then this pyruvate molecule is broken down to give rise to three molecules of carbon dioxide and water.

iii) This is because the amount of O₂ present in the water is very less as compared to the amount of O₂ present in the air.

(i) $f = 10 \text{ cm}$
 $v = 20 \text{ cm}$
 $1/v - 1/u = 1/f$
 $1/20 - 1/u = 1/10$
 $1/u = 1/20 - 1/10$
 $= -1/20$
 $u = -20 \text{ cm}$

(ii) $h = 2 \text{ cm}$
 $h' = 2 \text{ cm}$

(iii)



OR

(i) $u = -10 \text{ cm}$
 $R = -40 \text{ cm}$
 $f = -20 \text{ cm}$
 $1/v + 1/u = 1/f$
 $1/v = 1/f - 1/u$
 $= 1/-20 - 1/-10$
 $= 1/20$
 $v = 20 \text{ cm}$

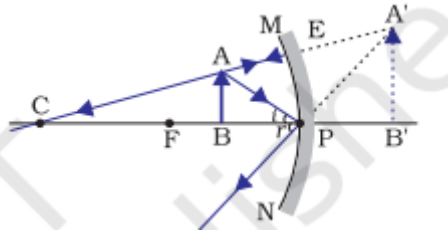
(ii) $h = 5 \text{ cm}$
 $h' / h = -v/u$
 $h' = h \times -v/u$
 $= 5 \times -20/-10$

36

2+1+2

= 10 cm

(iii)



SECTION - E

37 i) It is prepared by chlor alkali process. When sodium chloride is electrolysed using electricity NaOH is formed and H₂ and Cl₂ at cathode and anode.
 $\text{NaCl} + \text{H}_2\text{O} \xrightarrow{\text{electricity}} \text{NaOH} + \text{H}_2 + \text{Cl}_2$
ii) $\text{NaOH} + \text{CO}_2 \rightarrow \text{Na}_2\text{CO}_3 + \text{H}_2\text{O}$
iii) $\text{NaOH} + \text{Zn} \rightarrow \text{Na}_2\text{ZnO}_2 + \text{H}_2$

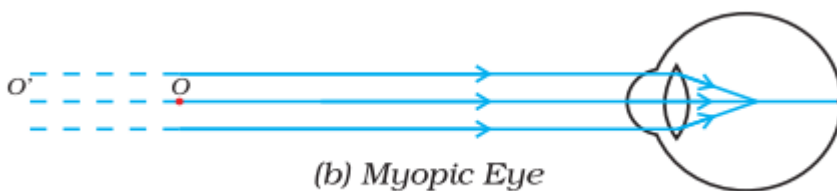
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38 i) Tropism
ii) The non-directional movement of a plant part in response to an external stimulus is known as nastic movement
iii) Auxins, Gibberellins, Cytokinins, Ethylene and Abscisic acid
iv) Auxin

4

39 (i) Myopia
(ii) Concave lens
(iii) $P = 1/f = 1/-50/100 = -100/50 = -2 \text{ D}$
(iv) (1) excessive curvature of the eye lens
(2) elongation of the eyeball.
OR

4



THE END