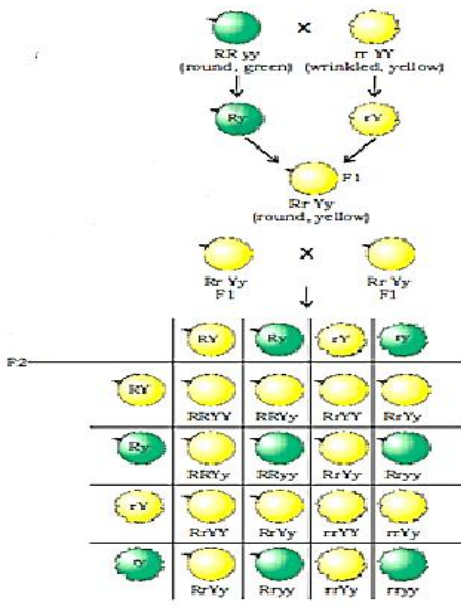


**MARKING SCHEME**  
**SCIENCE (Subject Code-086)**  
**(PAPER CODE: 31/5/3) (10-05-86K)**

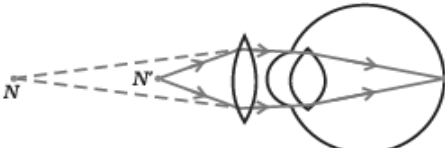
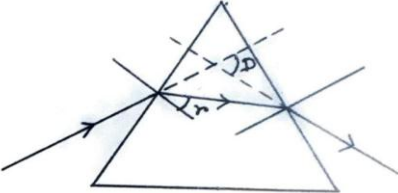
Q.No.	EXPECTED OUTCOMES/VALUE POINTS	Marks	Total marks
	<b>SECTION – A</b> <b>(Biology)</b>		
1.	(D) / Glucose → pyruvate $\xrightarrow{\text{lack of oxygen}}$ Lactic acid + Energy	1	1
2.	(B) / DDT	1	1
3.	(A) / Producers	1	1
4.	(C) / Guard cells	1	1
5.	(B) / Ozone shields earth's surface from harmful infra - red radiations.	1	1
6.	(C) / Uterus	1	1
7.	(C) / 44 + XY	1	1
8.	(A) / Both A and R are true and R is the correct explanation of A.	1	1
9.	(B) / Both A and R are correct but R is not the correct explanation for A	1	1
10.	<ul style="list-style-type: none"> <li>• Oxygenated blood from lungs comes to left atrium which pushes it to left ventricle →</li> <li>• Left ventricle contracts to push blood into aorta, to be sent to body parts →</li> <li>• Deoxygenated blood from body parts is collected and sent to right atrium →</li> <li>• Right atrium pushes it to right ventricle, to be sent to lungs for oxygenation.</li> </ul>	<p style="text-align: center;">½</p> <p style="text-align: center;">½</p> <p style="text-align: center;">½</p> <p style="text-align: center;">½</p>	2
11.	The lungs always contain a residual volume of air so that there is sufficient time for oxygen to be absorbed and for the carbon dioxide to be released.	2	2
12.	(A) P – Receptor/Skin Q - Sensory Neuron R - Relay Neuron S – Effector/Muscles in arm. <p style="text-align: center;"><b>OR</b></p> (B) (i) Cytokinin (ii) Abscisic acid/ ABA (iii) Auxin (iv) Abscisic acid/ ABA	<p style="text-align: center;">½</p> <p style="text-align: center;">½</p> <p style="text-align: center;">½</p> <p style="text-align: center;">½</p> <p style="text-align: center;">½</p> <p style="text-align: center;">½</p> <p style="text-align: center;">½</p>	2
13.	(a) <ul style="list-style-type: none"> <li>• Plastics being non - biodegradable persist in environment for a long time. (any other harmful effect)</li> <li>• Alternative - Jute or cloth bag (any other suitable alternative)</li> </ul> (b)	<p style="text-align: center;">½</p> <p style="text-align: center;">½</p>	

	<ul style="list-style-type: none"> <li>Pesticides and chemical fertilizers are not biodegradable. They accumulate progressively at each trophic level. As human beings occupy the top level in any food chain the maximum concentration of these chemicals get accumulated in our bodies.</li> <li>This Phenomenon is biological magnification.</li> </ul>	1  1	3
14.	<p>(a)</p>  <p>(b) Round, yellow: 9 Round, green: 3 Wrinkled yellow: 3 Wrinkled green: 1</p>	2  1	3
15.	<p>(a)</p> <ul style="list-style-type: none"> <li>Structure → Bowman's capsule is a cup shaped end of a coiled tube (nephron)</li> <li>Function → Bowman's capsule collects the filtrate from the blood.</li> </ul> <p>(b) Most of the water, salt, glucose, amino acids are selectively reabsorbed from the initial filtrate into the blood as the urine flows along the tubular part of nephron.</p> <p>(c)</p> <ul style="list-style-type: none"> <li>Excretion is the process of removal of metabolic wastes/ nitrogenous waste/ urea/uric acid from the body.</li> <li>It is essential for survival of a living organism as the excretory products are toxic and harmful to the organism.</li> </ul> <p style="text-align: center;"><b>OR</b></p> <p>(c)</p>	1/2  1/2  1  1  1	

	<ul style="list-style-type: none"> <li>Both lungs and kidneys remove metabolic waste /Lungs remove carbon dioxide gas (CO<sub>2</sub>) from the blood while kidneys remove nitrogenous wastes like urea from the blood.</li> <li>Both lungs and kidneys have thin-walled blood Capillaries involved in exchange of gases and filtration of blood respectively.</li> </ul>	1 1	4
16.	<p>(A)</p> <p>(i) Vegetative propagation. 1</p> <p>(ii) Advantages: - 1 + 1</p> <ul style="list-style-type: none"> <li>Plants raised by vegetative propagation can bear flowers and fruits earlier than those produced from seeds.</li> <li>Plants produced by vegetative propagation are genetically similar to the parent plant.</li> <li>Plants that have lost the capacity to produce seed can reproduce by Vegetative propagation. (any two advantages)</li> </ul> <p>(iii) Roses, grapes, banana, orange, jasmine etc. ½+½ (any two examples)</p> <p>(iv) Regeneration is carried out by specialised cells. The organisms which have those cells only can show regeneration. 1</p> <p style="text-align: center;"><b>OR</b></p> <p>(B)</p> <p>(i) (a) Zygote: It divides several times to form an embryo within the ovule. 1</p> <p>(b) Ovule: It develops a tough coat and is gradually converted into a seed. 1</p> <p>(c) Ovary: Grows rapidly and ripens to form a fruit. 1</p> <p>(d) Sepals: They shrivel and fall off. 1</p> <p>(ii) Germination is the process when the mature seed develops into a seedling under appropriate conditions. 1</p>		5
	<b>SECTION – B (Chemistry)</b>		
17.	(D)/ Al <sub>2</sub> O <sub>3</sub>	1	1
18.	(C)/ C <sub>3</sub> H <sub>8</sub>	1	1
19.	(B)/ MgO, turns red litmus blue.	1	1
20.	(D)/ C <sub>4</sub> H <sub>8</sub> and C <sub>5</sub> H <sub>12</sub>	1	1
21.	(D)/ hydrochloric acid and sodium hydroxide	1	1
22.	(D)/ CH <sub>3</sub> COONa   CH <sub>3</sub> COOH   NaOH   Basic	1	1
23.	(C)/ (Q) and (R)	1	1
24.	(A)/ Both A and R are true, and R is the correct explanation of A.	1	1



	<ul style="list-style-type: none"> <li><math>\text{CH}_3 - \text{CH}_2 - \text{OH} \xrightarrow{\text{alkaline KMnO}_4 + \text{heat}} \text{CH}_3\text{COOH}</math></li> </ul> <p>(c)</p> <ul style="list-style-type: none"> <li> <math display="block">\text{CH}_3 - \text{COOH} + \text{CH}_3 - \text{CH}_2\text{OH} \xrightarrow{\text{Acid}} \text{CH}_3 - \underset{\text{O}}{\underset{\parallel}{\text{C}}} - \text{O} - \text{CH}_2 - \text{CH}_3 + \text{H}_2\text{O}</math> </li> <li>Esterification reaction.</li> </ul> <p style="text-align: center;"><b>OR</b></p> <p>(c)</p> <ul style="list-style-type: none"> <li>Ethanol will get dehydrated to form ethene.</li> <li><math>\text{CH}_3 - \text{CH}_2 - \text{OH} \xrightarrow{\text{alkaline KMnO}_4 + \text{heat}} \text{CH}_3\text{COOH}</math> (Award full marks if equation is written with condition)</li> <li>Dehydrating agent/ Catalyst</li> </ul>	<p>½</p> <p>1</p> <p>1</p> <p>½</p> <p>½</p> <p>1</p>	<p>4</p>
29.	<p>(A)</p> <p>(i) (I) A considerable amount of energy is required to break strong inter-ionic attraction.</p> <p>(II) Solder has low melting point.</p> <p>(III) Because Na or Mg have more affinity for oxygen than carbon.</p> <p>(ii) (I) <math>\text{Fe}_2\text{O}_3</math>/ Iron (III) oxide</p> <p>(II) Thermit reaction</p> <p>(III) <math>\text{Fe}_2\text{O}_3(\text{s}) + 2\text{Al}(\text{s}) \rightarrow 2\text{Fe}(\text{l}) + \text{Al}_2\text{O}_3(\text{s}) + \text{Heat}</math> (Deduct ½ mark if no/ incorrect balancing)</p> <p style="text-align: center;"><b>OR</b></p> <p>(B) (i)</p> <p>(I) <math>2\text{Cu}_2\text{O} + \text{Cu}_2\text{S} \rightarrow 6\text{Cu}(\text{s}) + \text{SO}_2(\text{g})</math></p> <p>(II) <math>2\text{ZnS}(\text{s}) + 3\text{O}_2(\text{g}) \rightarrow 2\text{ZnO}(\text{s}) + 2\text{SO}_2(\text{g})</math> (Deduct ½ mark if no/ incorrect balancing in each case)</p> <p>(ii) (I) PVC provides insulation on the current carrying wires</p> <p>(II) Copper does not react with cold water, hot water and steam. / Copper is better conductor of heat than steel.</p> <p>(iii)</p> $\text{Ca} : + \overset{\times\times}{\underset{\times\times}{\text{O}}} : \longrightarrow [\text{Ca}^{2+}] [ : \overset{\times\times}{\underset{\times\times}{\text{O}}} : ]^{2-}$	<p>1</p> <p>1</p> <p>1</p> <p>½</p> <p>½</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>5</p>
	<b>SECTION – C</b> <b>(Physics)</b>		
30.	(A)/ 20cm	1	1
31.	(A)/ Converging lens	1	1
32.	(D)/ Assertion (A) is false but reason (R) is true.	1	1
33.	(a)	½	

	<ul style="list-style-type: none"> <li>Speed of light in medium 'X' is more than in medium 'Y'.</li> <li>Because light ray bends away from the normal in optically rarer medium.</li> </ul> <p>(b)</p> <ul style="list-style-type: none"> <li>Optical density of medium 'X' is less than medium 'Y'.</li> <li>Because in optically rarer medium light bends away from the normal.</li> </ul>	<p>1/2</p> <p>1/2</p> <p>1/2</p>	<p>2</p>
34.	<p>(A) (i) While looking at objects nearer to eye, the curvature of the eye lens increases. Consequently, the focal length of the eye lens decreases.</p> <p>(ii) From 25cm (near point) to infinity (far point)</p> <p style="text-align: center;"><b>OR</b></p> <p>(B)</p>  <p style="text-align: center;">(Deduct 1/2 mark for not showing the direction of light)</p>	<p>1</p> <p>1</p> <p>2</p>	<p>2</p>
35.	<p>(a)</p>  <p style="text-align: center;"><math>\angle r = \text{angle of refraction}</math> <math>\angle D = \text{angle of deviation}</math></p> <p style="text-align: right;">Diagram Labelling</p> <p>(b)</p> <ul style="list-style-type: none"> <li>Angle of deviation will not change.</li> <li>The ray of light will retrace its original path.</li> </ul>	<p>1</p> <p>1/2 + 1/2</p> <p>1/2</p> <p>1/2</p>	<p>3</p>
36.	<p>(a) Height of object = 6.0 cm</p> <p><math>u = -30 \text{ cm}</math></p> <p><math>f = -15 \text{ cm}</math></p> $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$ $\frac{1}{v} = \frac{1}{f} + \frac{1}{u}$ $\frac{1}{v} = \frac{1}{-15} + \frac{1}{-30}$	<p>1/2</p> <p>1/2</p>	



<p><b>39</b></p>	<p>(A)</p> <p>(i) Stretch the thumb, forefinger and middle finger of your left hand such that they are mutually perpendicular. If the first finger points in the direction of magnetic field and the second finger in the direction of current, then the thumb will point in the direction of motion or the force acting on the conductor.</p> <p>(ii) Electric motor, loud speaker, electric generator, microphones , measuring instruments. [Any two]</p> <p>(iii) For fig (I)</p> <ul style="list-style-type: none"> <li>• Maximum force</li> <li>• Because direction of motion of electron is perpendicular to the direction of magnetic field.</li> </ul> <p>For fig (II)</p> <ul style="list-style-type: none"> <li>• Zero/ No force</li> <li>• Because direction of magnetic field and direction of movement of electron are same.</li> </ul> <p style="text-align: center;">OR</p> <p>(B) (i)</p> <ul style="list-style-type: none"> <li>• Direct contact between live and neutral wire</li> <li>• Insulation of electrical wires is damaged.</li> <li>• Overloading</li> </ul> <p>(ii)</p> <ul style="list-style-type: none"> <li>• No,</li> <li>• The fuse must be connected in series with live wire.</li> </ul> <p>(iii) <math>P= VI</math>    <math>I = \frac{2200}{220} = 10A</math>  The minimum rating of the fuse should be slightly more than 10 A.</p>	<p style="text-align: center;"><b>1</b></p> <p style="text-align: center;"><math>\frac{1}{2} + \frac{1}{2}</math></p> <p style="text-align: center;"><math>\frac{1}{2}</math></p> <p style="text-align: center;"><b>1</b></p> <p style="text-align: center;"><math>\frac{1}{2}</math></p> <p style="text-align: center;"><b>1</b></p> <p style="text-align: center;"><math>\frac{1}{2}</math></p> <p style="text-align: center;"><math>\frac{1}{2}</math></p> <p style="text-align: center;"><b>1</b></p>	<p style="text-align: center;"><b>5</b></p>
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