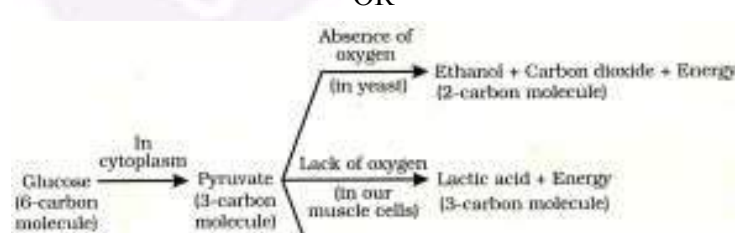
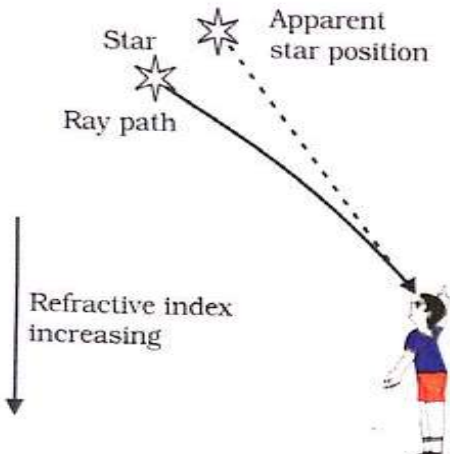
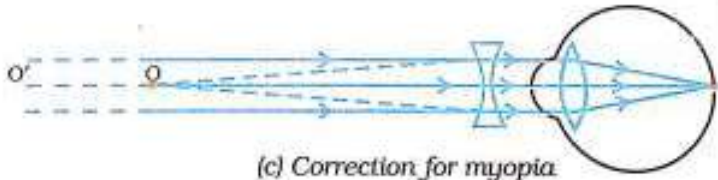


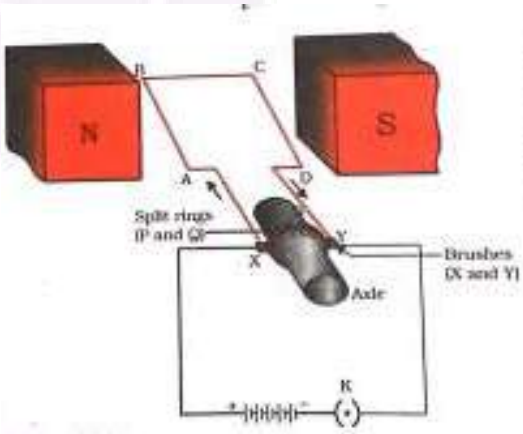
MARKING SCHEME – SCIENCE (Code No.31/1) SET-II

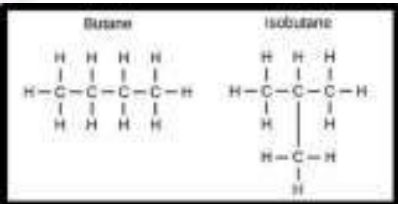
Q.N	Key Points	Marks	Grand Marks						
1	If 1J of work is done to carry 1 coulomb of charge from one point to another.	1	1						
2	Plant -----> goat----->fox----->lion (Producers) (Herbivore) (Carnivore) (Top Carnivore) (full credit for the correct sequence)	1	1						
3	$\begin{array}{l} \text{Mg} \longrightarrow \text{Mg}^{2+} + 2e^{-} \\ [2, 8, 2] \quad [2, 8] \\ \text{O} + 2e^{-} \longrightarrow \text{O}^{2-} \\ [2, 6] \quad [2, 8] \\ \text{Mg}^{2+} + \text{O}^{2-} \longrightarrow \text{MgO} \end{array}$	1/2 x 4	2						
4	<ul style="list-style-type: none"> Insulin - A hormone produced in the pancreas which regulates the amount of glucose in the blood To reduce the blood glucose level. <p style="text-align: center;">(OR)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Movement of leaf in sensitive plant</th> <th style="width: 50%;">Movement of shoot towards light</th> </tr> </thead> <tbody> <tr> <td>(i) Movement in response to the stimulus of touch independent of direction of stimulus.</td> <td>Movement in response to the direction of stimulus.</td> </tr> <tr> <td>(ii) Independent of growth</td> <td>Growth movement.</td> </tr> </tbody> </table>	Movement of leaf in sensitive plant	Movement of shoot towards light	(i) Movement in response to the stimulus of touch independent of direction of stimulus.	Movement in response to the direction of stimulus.	(ii) Independent of growth	Growth movement.	1 1 1	2
Movement of leaf in sensitive plant	Movement of shoot towards light								
(i) Movement in response to the stimulus of touch independent of direction of stimulus.	Movement in response to the direction of stimulus.								
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5	The extent of bending of a light ray at core opposite parallel faces of the rectangular glass slab is equal. Therefore, the emergent ray is parallel to the incident ray. So it cannot produce any spectrum.	2	2						
6	<p>The first step in the breakdown of glucose. Glucose is converted to pyruvate.</p> <ul style="list-style-type: none"> - Pyruvate in the absence of O₂ may be converted to ethanol, CO₂ and energy - Pyruvate in the shortage of O₂ may be converted to lactic acid and energy. <p style="text-align: center;">OR</p> <div style="text-align: center;">  </div>	1 1 1	3						
7	<p>Four function of human heart:</p> <ul style="list-style-type: none"> Receives deoxygenated blood from body Sends blood to lungs for oxygenation Receives oxygenated blood from lungs Pumps oxygenated blood to different parts of body <p>(or complete functioning of heart with correct description)</p>	1/2 x 4							

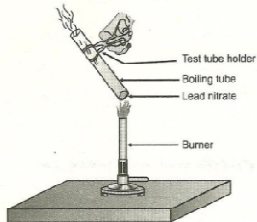
	<ul style="list-style-type: none"> To have efficient supply of O₂ for their high energy needs. Separation of oxygenated and deoxygenated blood.	$\frac{1}{2} + \frac{1}{2}$	3
8	(a) <ul style="list-style-type: none"> (i) Fore brain / cerebrum (ii) Hine brain / medulla oblongata (b) PNS helps in facilitating the communication between CNS (Central Nervous System) and other parts of body (spinal cord) Components of PNS <ul style="list-style-type: none"> Cranial Nerves - Brain Spinal Nerves - Spinal Cord 	$\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{1}{2} + \frac{1}{2}$	3
9	a) Speciation: It refers to the process by which new species are formed from the pre-existing species <ul style="list-style-type: none"> i) Geographical isolation ii) Genetic drift iii) Natural selection (b) Natural selection is the process by which organisms having some special features are at an advantage for better survival in the changed environment. (Or explanation with the help of the any example) <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> F₁ generation – all plants with round seeds F₂ generation – plants with round and wrinkled seeds. Tall / dwarf plants Yellow / green seeds White / purple flowers (any two)	1 $\frac{1}{2}$ $1\frac{1}{2}$ 1 $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$	3
10	<ul style="list-style-type: none"> Bending of light due to the variation in optical density of the medium. The starlight, on entering into earth's atmosphere undergoes continuous refraction before it reaches the earth. The since the atmosphere bends starlight towards the normal, the apparent position to the star is slightly different from its actual position. 	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $1\frac{1}{2}$	

	<p style="text-align: center;">Diagram with Correct labeling</p> <p style="text-align: center;">OR</p> <p>(i) If the student cannot see the words written on the black board then he is considered myopic.</p> <p>(ii) The defect may arise due to</p> <ol style="list-style-type: none"> 1) Excessive curvature of the eyeball 2) Elongation of the eyeball <p>(iii)</p>  <p style="text-align: center;">(c) Correction for myopia</p>	<p style="text-align: center;">1</p> <p style="text-align: center;">$\frac{1}{2} \times 2$</p> <p style="text-align: center;">1</p> <p style="text-align: center;">3</p>										
11	<p>Bio gas is an excellent fuel</p> <ol style="list-style-type: none"> i. It burns without smoke ii. Leaves no residue iii. Its heating capacity is high iv. Efficient method of waste disposal <p>The main constituent of this gas is methane (75%)</p>	<p style="text-align: center;">$\frac{1}{2} \times 4$</p> <p style="text-align: center;">1</p> <p style="text-align: center;">3</p>										
12.	<p>* Nutrient rich water from the surrounding fields drain into the lake resulting in high growth of floating plants.</p> <p>* Layer of floating plants used up the dissolved oxygen and blocked sunlight.</p>	<p style="text-align: center;">$1\frac{1}{2}$</p> <p style="text-align: center;">$1\frac{1}{2}$</p> <p style="text-align: center;">3</p>										
13	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">Activity</th> <th style="width: 33%;">Observation</th> <th style="width: 33%;">Inference</th> </tr> </thead> <tbody> <tr> <td>Put metal R in the sulphate solution of metal Q and P</td> <td>Solution becomes colourless in both the test tubes.</td> <td>R displaces P and Q ions from their solutions.</td> </tr> <tr> <td>Put metal P in the solution of sulphate ions of metal Q</td> <td>No reaction</td> <td>P cannot displace Q ions from the solution</td> </tr> </tbody> </table> <p>So the $P < Q < R$</p> <p style="text-align: center;">(From activity to inference award 1 mark)</p> <p style="text-align: center;">OR</p> <p>Cinnabar / (HgS)</p> $2\text{HgS} + 3\text{O}_2 \rightarrow 2\text{HgO} + 2\text{SO}_2$ $2\text{HgO} \xrightarrow{\Delta} 2\text{Hg(l)} + \text{O}_2$	Activity	Observation	Inference	Put metal R in the sulphate solution of metal Q and P	Solution becomes colourless in both the test tubes.	R displaces P and Q ions from their solutions.	Put metal P in the solution of sulphate ions of metal Q	No reaction	P cannot displace Q ions from the solution	<p style="text-align: center;">1</p> <p style="text-align: center;">1</p> <p style="text-align: center;">1</p> <p style="text-align: center;">1</p>	
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	(Complete process explained in the form of sentence full credit may be given.)		3
14	B - <u>sodium hydroxide</u> It reacts with sulphur dioxide $\text{NaOH} + \text{SO}_2 \rightarrow \text{Na}_2\text{SO}_3 + \text{H}_2\text{O}$ (sodium sulphite and water) Neutralization reaction	1 1 1	3
15	Atomic number 13 (2, 8, 3) element has electropositive character, belongs to group 13 and has valency 3.	1+1+1	3
16	a) Four characteristics: i. Image is formed on the same side of the lens as the object. ii. The image is enlarged / magnified, virtual and erect. b) $h' = \frac{h}{3}$ Focal length = -20cm As per the lens formula $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$ $u = -40\text{cm}$	$\frac{1}{2}$ $\frac{1}{2} \times 3$ 1 1 1	5
17	(a) • In series - $R_S = R_1 + R_2 + R_3$. • In parallel - $\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ Resistance is at minimum - $\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2}$ $\frac{1}{12} + \frac{1}{12} = \frac{2}{12} = 6\Omega$ Resistance is maximum - $R_S = R_1 + R_2$ $R_S = 12 + 12 = 24\Omega$ $P = \frac{v^2}{R}$ Power ration in parallel and series = 4:1 (b) $\frac{P_{\min}}{P_{\max}} = \frac{V^2 / R_{\min}}{V^2 / R_{\max}} = \frac{R_{\max}}{R_{\min}} = \frac{24}{6} = \frac{4}{1}$ OR (a)	$\frac{1}{2}$ $\frac{1}{2}$ 1 1 2	

	$R \propto l$ $R \propto \frac{1}{A}$ $R \propto \frac{l}{A}$ $R = \rho \frac{l}{A}$ $\rho = \frac{RA}{l} = \frac{\text{ohm} \times \text{m}^2}{\text{m}}$ $= \text{ohm} \times \text{m}$	$\frac{1}{2} \times 6$	
	<p>(b)</p> $\rho = \frac{RA}{l}$ $= \frac{100 \times 3 \times 10^{-7}}{5}$ $= 60 \times 10^{-7} \text{ ohm} \times \text{m}$	$\frac{1}{2}$ $\frac{1}{2}$ 1	5
18	<p>(a)</p> <ul style="list-style-type: none"> The rule is Fleming's left hand rule. If the finger points in the direction of the 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>(b) Electric motor.</p> 	1 2	
19	a) Reproduction- The process of producing offsprings / young ones of its own kind.	1	

	<p>Types: i) Asexual ii) Sexual</p> <p>b)</p> <table border="1"> <thead> <tr> <th>Unicellular Organisms</th> <th>Multicellular Organisms</th> </tr> </thead> <tbody> <tr> <td>1) Only one parent is required</td> <td>Two parents are required</td> </tr> <tr> <td>2) It is a fast process of reproduction.</td> <td>Slower process of reproduction than in unicellular organisms.</td> </tr> <tr> <td>3) No specialized cells are required for reproduction.</td> <td>Specialized cells are required for reproduction.</td> </tr> </tbody> </table> <p style="text-align: right;">(Any two points)</p> <p style="text-align: center;">OR</p> <p>a) STD- A disease that can be transmitted through sexual contact.</p> <ul style="list-style-type: none"> • Viral – i) Warts ii) AIDS • Bacterial- i) Gonorrhoea ii) Syphilis <p>b) Contraception: The method of preventing unwanted pregnancies, Reasons –</p> <ol style="list-style-type: none"> i) To prevent unwanted pregnancies ii) To control population rise / birth rate iii) To prevent transfer of STD's iv) Proper gap between successive births v) For the better health of mother <p style="text-align: right;">(Any three)</p>	Unicellular Organisms	Multicellular Organisms	1) Only one parent is required	Two parents are required	2) It is a fast process of reproduction.	Slower process of reproduction than in unicellular organisms.	3) No specialized cells are required for reproduction.	Specialized cells are required for reproduction.	<p>1 1</p> <p>1</p> <p>1</p> <p>1</p> <p>1 $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2} \times 3$</p>	5
Unicellular Organisms	Multicellular Organisms										
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20	<p>The compounds that have identical molecular formula but different structures are called structural isomers characteristics</p> <ol style="list-style-type: none"> i) They have same molecular formula ii) Their structures are different iii) Different physical and chemical properties. iv) Same molecular mass and number of atoms. <div style="text-align: center;">  </div>	<p>1</p> <p>$\frac{1}{2} \times 4$</p> <p>1+1</p>	5								
21	<p>(a) Exchange of ions in a reaction between two.</p> <p>(b)</p> $\text{Na}_2\text{SO}_4 + \text{BaCl}_2 \longrightarrow \text{BaSO}_4 + 2 \text{NaCl}$ <p style="text-align: center;">(If the answer is descriptive form award marks)</p>	<p>1</p> <p>1</p>									

	<p>(b) (i) Combination reaction: A combination reaction is a reaction where two or more elements or compounds combine to form a single compound.</p> <p>(ii) $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$ Quick lime Calcium Hydroxide\</p> <p>Chemical name of the product formed - (calcium hydroxide (slaked lime))</p> <p>(iii) Observations of the reactions:</p> <ul style="list-style-type: none"> - Reaction takes place vigorously - Large amount of heat is released. <p style="text-align: center;">OR</p> <p>(a) Activity : Take a pinch of lead nitrate powder in a test tube. Heat it over the flame.</p>  <p style="text-align: center;">(½ marks for labeling)</p> <p>(b) Observation :</p> <ul style="list-style-type: none"> • Emission of brown fumes observed • Reddish brown colour of residue (any one) <p>(c)</p> $2\text{Pb(NO}_3)_2(s) \xrightarrow{\text{Heat}} 2\text{PbO}(s) + 4\text{NO}_2(g) + \text{O}_2(g)$ <p style="text-align: center;"> Lead nitrate Lead oxide Nitrogen dioxide Oxygen </p>	<p>½ + ½</p> <p>½</p> <p>½</p> <p>½ + ½</p> <p>1</p> <p>1</p> <p>½ + ½</p> <p>1+1</p>	<p>5</p> <p>5</p>
22	<p>a) 0.15V is the least count</p> <p>b) The reading shown is 1.8V</p> <p>c) $R = 20\Omega$ $V=1.8V$ $I = \frac{V}{R} = \frac{1.8}{20} = .09amp$</p>	<p>½</p> <p>½</p> <p>1</p>	<p>2</p>
23	<p>i. Fix a concave mirror on a stand and place it near a source of bright light</p> <p>ii. Place a screen fitted on a stand in front of the mirror</p> <p>iii. Move the screen back and forth, until a sharp and clear image of a distance object like a tree is obtained on the screen</p> <p>iv. Mark the position of mirror and screen on the scale and note the distance between them</p> <p style="text-align: center;">OR</p> <p style="text-align: center;">The student should take the following precaution</p> <p>(a) Precaution -</p> <ul style="list-style-type: none"> (i) See that the pins are in a straight line and at least 3cm apart. (ii) Angle of incidence should be between 30° to 60°. (iii) Glass slab should always remain inside the boundary. <p style="text-align: right;">(any two)</p>	<p>½x4</p> <p>½</p> <p>½</p>	

	<p>(b) Conclusion -</p> <p>(i) The emergent ray is parallel to incident ray</p> <p>(ii) Lateral displacement takes place.</p> <p>(iii) Angle of incidence = Angle of emergence</p> <p>(any two)</p>	<p>½</p> <p>½</p>	2
24	<p>Ethanoic acid</p> <p>a) Odour – it smells like vinegar</p> <p>b) It is soluble in water</p> <p>c) Blue litmus to red</p> <p>d) $\text{NaHCO}_3 + \text{CH}_3\text{COOH} \rightarrow \text{CH}_3\text{COONa} + \text{H}_2\text{O} + \text{CO}_2$</p>	<p>½</p> <p>½</p> <p>½</p> <p>½</p>	2
25	<ul style="list-style-type: none"> • Putting Cu strips in FeSO_4 --- no reaction • Putting Al strips in FeSO_4 -- change in colour observed • Displacement reaction • $\text{Al} + \text{FeSO}_4 \rightarrow \text{Al}_2(\text{SO}_4)_3 + \text{Fe}$ <p>(OR)</p> <ol style="list-style-type: none"> 1) Do not point the mouth of boiling tube at your neighbours or yourself / point the test tube away from the body 2) Hold the test tube in inclined position 3) Hold the test tube with Tongs <p>(Any two)</p>	<p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>1+1</p>	2
26	<p>a) Saffranin is used to stain the material for better view.</p> <p>b) Glycerine is used to avoid drying of peel.</p> <p>OR</p> <p>i) Take a thin peel of leaf on a glass slide.</p> <p>ii) Stain it with saffranin</p> <p>iii) Remove extra stain</p> <p>iv) Put a drop of glycerin and cover it with cover slip</p>	<p>1</p> <p>1</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p>	2
27	<p>i) Conical flask is not air tight.</p> <p>ii) Freshly prepared solution of KOH not used.</p> <p>iii) Germinating seeds may be dry.</p> <p>(any two)</p>	<p>1+1</p>	2