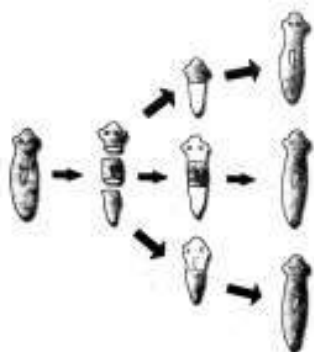


	(ii) Concave / diverging lens and focal Length = 200cm (iii) (a) excessive curvature of the eye lens (b) elongation of eye ball	½ ½	3
A 7	Chain of organisms formed as a result of eating or being eaten by organisms is called food chain / A series of organisms feeding on one another, is called food chain. Grass → Insect (grasshopper) → Frog → Snake (Producer) (Herbivore) (Carnivore) (Top Carnivore) (Any other example of food chain) - Tertiary trophic level / snake - Biological magnification / Biomagnification	1 1 ½ ½	3
A 8	A device that converts solar energy directly into electrical energy. A large no. of solar cells are combined in an arrangement called Solar Cell Panel. Principal Advantages – (i) They have no moving parts (ii) require little maintenance & work quite satisfactorily without the use of any focusing device. (iii) These cells can be set up in remote & inaccessible areas where laying of a power transmission may be expensive. (any two)	1 1 1+1	3
A 9	(a) Silver is placed below Hydrogen in reactivity series / among least reactive metal / Silver does not react with dil. Hydrochloric acid. (b) Rate of reaction is slow / bubbles of Hydrogen gas are formed / lead lies above hydrogen in reactivity series. (c) Sodium is highly reactive / reaction is highly exothermic, evolving Hydrogen gas, which catches fire. (d) Reaction is exothermic	½ 1 1 ½	3
A 10	(i) $2 \text{Cu}_2\text{S} + 3\text{O}_2 \xrightarrow{\text{Heat}} 2 \text{Cu}_2\text{O} + 2\text{SO}_2$ (ii) $2\text{Cu}_2\text{O} + \text{Cu}_2\text{S} \xrightarrow{\text{Heat}} 6 \text{Cu} + \text{SO}_2$ (iii) At anode $\rightarrow \text{Cu} \rightarrow \text{Cu}^{2+} + 2\bar{e}$ At Cathode $\rightarrow \text{Cu}^{2+} + 2\bar{e} \rightarrow \text{Cu}$	1 1 ½ ½	3
A 11	(a) The process of diluting an acid is highly exothermic , and on the addition of acid to the water the excess heat is absorbed by water. (b) Because HCl does not form $\text{H}^+/\text{H}_3\text{O}^+$ ions in dry condition. OR • When electricity is passed through an aqueous solution of sodium chloride (brine) • Chlor – alkali process	1 1 1 ½ ½	

	<ul style="list-style-type: none"> X - Cl₂ Y = CaOCl₂ <ul style="list-style-type: none"> $2\text{NaCl}_{(\text{aq})} + 2\text{H}_2\text{O}_{(\text{l})} \rightarrow 2\text{NaOH}_{(\text{aq})} + \text{Cl}_{2(\text{g})} + \text{H}_{2(\text{g})}$ $\text{Ca}(\text{OH})_2 + \text{Cl}_2 \rightarrow \text{CaOCl}_2 + \text{H}_2\text{O}$ 	½ ½ ½ ½	3																
A 12	<p>(i) A series of compounds in which the same functional group substitutes for hydrogen in a carbon chain is called a homologous series.</p> <p>(ii) Example – Alkane / Alkene / Alkyne / Alcohol or any other one correct example.</p> <p>(iii) Characteristics:-</p> <p>(i) They have same general formula</p> <p>(ii) They have same functional group</p> <p>(iii) The difference in the molecular mass of two successive member in 14μ</p> <p>(iv) The difference in the molecular formula of two successive member is of CH₂ unit.</p> <p>(v) They have similar chemical properties.</p> <p style="text-align: right;">(Any three points)</p>	1 ½ ½ x3	3																
A 13	<ul style="list-style-type: none"> The loss of water in the form of vapour from the aerial parts/leaves/stems is known as transpiration. Functions:- <ul style="list-style-type: none"> (i) It helps in the absorption and upward movement of water (ii) movement of dissolved minerals from root to leaves. (iii) It helps in the temperature regulation or cooling of the plant. <p style="text-align: center;">OR</p> <p>(a) The transport of soluble products of photosynthesis (food or glucose) from one part to the other parts of the plant. To provide food to all parts of the plant.</p> <p>(b) Root, fruits, seeds and other growing organs/parts of the plant. (any two)</p> <p style="text-align: right;">(Any two points)</p>	1 1+1 1 1 ½ + ½	3																
A 14	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Autotrophic Nutrition</th> <th colspan="2">Heterotrophic Nutrition</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>They can prepare their own food</td> <td style="text-align: center;">1</td> <td>They cannot prepare their own food.</td> </tr> <tr> <td style="text-align: center;">2</td> <td>They require raw materials like CO₂, H₂O in the presence of sunlight and chlorophyll to prepare their food.</td> <td style="text-align: center;">2</td> <td>They depend on other plants & animals for their food.</td> </tr> <tr> <td style="text-align: center;">3</td> <td>They store the food in the form of starch.</td> <td style="text-align: center;">3</td> <td>They store the food in the form of glycogen.</td> </tr> </tbody> </table> <p style="text-align: right;">Any other point</p>	Autotrophic Nutrition		Heterotrophic Nutrition		1	They can prepare their own food	1	They cannot prepare their own food.	2	They require raw materials like CO ₂ , H ₂ O in the presence of sunlight and chlorophyll to prepare their food.	2	They depend on other plants & animals for their food.	3	They store the food in the form of starch.	3	They store the food in the form of glycogen.	1 x 3	3
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3	They store the food in the form of starch.	3	They store the food in the form of glycogen.																
A 15	<p>(a) Because these methods involve only one parent / organisms are formed as a result of mitotic division / progeny (organisms) are similar in their genetic makeup and no variations. (any one)</p> <p>(b)</p>	1																	



(i) Planaria can be cut into any number of pieces and each piece grows through specialized cells into a complete organism.

1

1

3

A 16

SECTION D

Given –

$$h = 6 \text{ cm}$$

$$f = -30 \text{ cm}$$

$$v = -45 \text{ cm}$$

mirror formula

$$\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$$

$$\frac{1}{v} = \frac{1}{f} - \frac{1}{u}$$

$$= -\frac{1}{30} - \frac{1}{(-45)}$$

$$= -\frac{1}{30} + \frac{1}{45} = -\frac{1}{90}$$

 $f = -90 \text{ cm}$ from the pole of mirror

Size of the image

$$m = \frac{-v}{u}$$

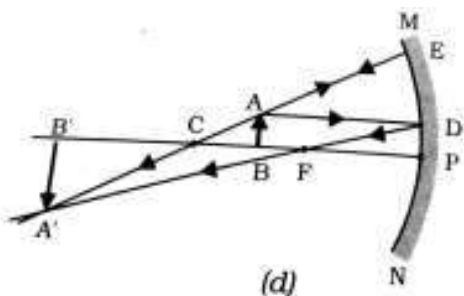
$$= -\frac{90}{45} = -2$$

$$h^1 = -2 \times 6 \text{ cm}$$

$$= -12 \text{ cm}$$

 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$

Image formed will be real, inverted and enlarged.



Well labelled diagram

Or

Given –

$$f = +30 \text{ cm}$$

$$u = -50 \text{ cm}$$

$$h = 6.0 \text{ cm}$$

lens formula

$$\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$$

$$\frac{1}{v} = \frac{1}{f} + \frac{1}{u}$$

$$= \frac{1}{30} - \frac{1}{50}$$

$$\frac{5 - 3}{150} = \frac{2}{150} = \frac{1}{75}$$

$$\therefore v = +75 \text{ cm}$$

$$m = \frac{v}{u} = \frac{h_1}{h}$$

$$= \frac{75}{-50} = \frac{h_1}{6}$$

$$h_1 = -9 \text{ cm}$$

Image formed is real, inverted and enlarged

1

2

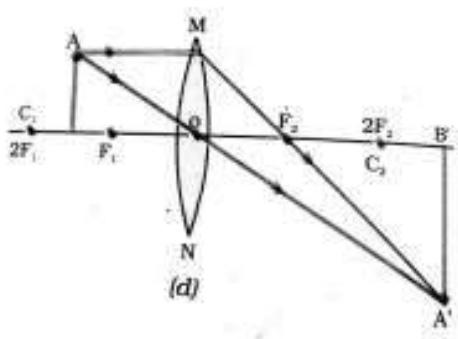
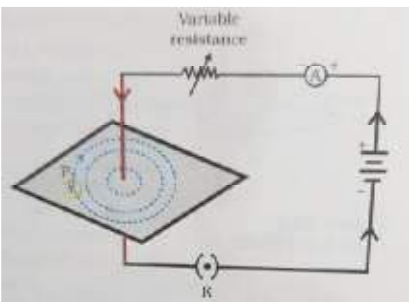
$\frac{1}{2}$

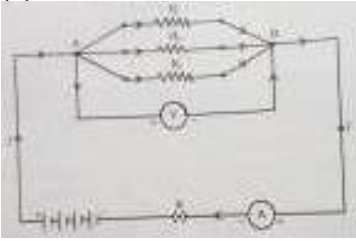
$\frac{1}{2}$

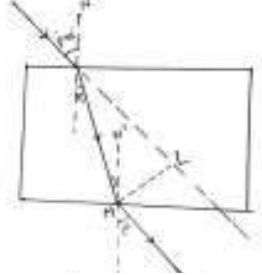
$\frac{1}{2}$

$\frac{1}{2}$

1

	 <p>Well labelled diagram</p>	2	5
A 17	 <p>Diagram 1 ½ and direction ½</p> <p>Statement of right hand thumb rule. The magnetic field strength decreases with increase of distance from the current carrying conductor. Reason: There is inverse relation between field strength and distance from current carrying conductor. Note: Direction of magnetic field should be in accordance with direction of current</p>	1+1 1 1 1	5
A 18	<p>(a)</p> <ol style="list-style-type: none"> Join the three resistors of different values in series Connect them with battery, an ammeter and plug key. Plug the key and note the ammeter reading Change the position of ammeter to anywhere in between the resistors and note the ammeter reading each time. The ammeter reading will remain same everytime. Therefore when resistors are connected in series same current flows through all resistors, when it is connected to a battery. <p>Note: If explained with the help of diagram give full credit</p> <p>(b) Total resistance of the circuit = $R = R_1 + R_2 + R_3 = 5 + 10 + 15 = 30 \text{ ohm}$ Potential difference across the circuit / By ohm's law $V = IR$ or $I = \frac{V}{R} = \frac{30V}{30\text{ohm}} = 1A$ Potential difference across 15 ohm Resistor = $1A \times 15 \text{ ohm} = 15 \text{ volt}$</p>	½ x 5 1 1 ½	

	<p style="text-align: center;">OR</p> <p>(a) Total current $I = I_1 + I_2 + I_3$ Let R_p be the equivalent resistance of R_1, R_2, R_3. Then the total current $I = \frac{V}{R_p}$</p> <p>(i) On applying ohm's law for each R_1, R_2, R_3</p> $I_1 = \frac{V}{R_1}, I_2 = \frac{V}{R_2}, I_3 = \frac{V}{R_3}$ $\therefore I = V \left(\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} \right) = \frac{V}{R_p}$ $\therefore \frac{1}{R_p} + \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ <p>(b)</p>  $\frac{1}{R_p} = \frac{1}{20} + \frac{1}{20} = \frac{2}{20} = \frac{1}{10}$ $\Rightarrow R_p = 10 \text{ ohms}$ <p>Equivalent resistance of the network = $R_{eq} = R_1 + R_p = 10 + 10 = 20 \text{ ohm}$</p>	<p style="text-align: center;">1</p> <p style="text-align: center;">$\frac{1}{2}$</p> <p style="text-align: center;">$\frac{1}{2}$</p> <p style="text-align: center;">$\frac{1}{2}$</p> <p style="text-align: center;">$\frac{1}{2}$</p> <p style="text-align: center;">$\frac{1}{2}$</p> <p style="text-align: center;">$\frac{1}{2}$</p> <p style="text-align: center;">1</p> <p style="text-align: center;">1</p>	<p style="text-align: center;">5</p>																									
A 19	<p>(a)</p> <p>(i) No fixed position of H in the periodic table. (ii) Position of isotopes not clear. (iii) Atomic mass does not increase in a regular manner.</p> <p style="text-align: right;">(or any other)</p> <p>(b)</p> <p>(i) Left to right metallic character decreases Reason: Effective nuclear charge increases / tendency to loose electrons decrease / electro positivity decreases (any one reason)</p> <p>(ii) Top to bottom metallic character increases Reason :- Size of atom increase/tendency to loose electron increases (any one reason)</p> <p style="text-align: center;">OR</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> </tr> </thead> <tbody> <tr> <td></td> <td>1</td> <td>3</td> <td>5</td> <td>7</td> </tr> <tr> <td>• Group no.</td> <td>1st</td> <td>13th</td> <td>15th</td> <td>17th</td> </tr> <tr> <td>• B = 2, 8, 3</td> <td></td> <td>D = 2, 8, 7</td> <td></td> <td></td> </tr> <tr> <td>• BD_3</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		A	B	C	D		1	3	5	7	• Group no.	1 st	13 th	15 th	17 th	• B = 2, 8, 3		D = 2, 8, 7			• BD_3					<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;">$\frac{1}{2}$</p> <p style="text-align: center;">$\frac{1}{2}$</p> <p style="text-align: center;">$\frac{1}{2}$</p> <p style="text-align: center;">$\frac{1}{2}$</p> <p style="text-align: center;">$\frac{1}{2}$</p> <p style="text-align: center;">$\frac{1}{2} \times 4$</p> <p style="text-align: center;">1+1</p> <p style="text-align: center;">1</p>	<p style="text-align: center;">5</p>
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A 20	<ul style="list-style-type: none"> When male and female organisms are involved in producing young ones, is known as sexual reproduction / Gametes from two organisms of opposite sex must fuse to produce young ones. Gametes (germs cells) produced are the products of meiosis / due to combining of DNA from two individuals, this results in mixing of characters and causes variations. In asexual reproduction, single parent produces young ones. There is no mixing of characters. More variations help in the process of evolution. Helpful variations accumulate over time and produce new species and result in evolution. 	1 1,1 1 1	5
A 21	<p>(a)</p> <ul style="list-style-type: none"> Iodine is essential for functioning of thyroid / formation of thyroxine hormone Disease is Goitre Swollen neck <p>(b) Impulse travels from dendrite to cell body, then along the axon to its end. At the end some chemicals are released which fill the gap of synapse, and starts a similar electrical impulse to another neuron and the impulse further travel in the body. (Award marks if attempted as a flow chart also)</p> <p style="text-align: center;">OR</p> <p>The movement/response of part of plant (root) towards water Experiment:- (i) Soak the seeds in water overnight (ii) Place moist cotton in a perforated petridish (iii) Put the soaked seeds in the petridish & place it on a beaker (iv) Roots pass through pores and grow downwards. (v) After sometime roots will bend towards base of petridish having moisture.. (Or Any other relevant experiment)</p>	1 1 1 2 1 $\frac{1}{2}$ $\frac{1}{2}$ 1 1 1	5
A 22	SECTION -E	$\frac{1}{2} + \frac{1}{2}$	2
A 23	 <p>Labelling</p> <ul style="list-style-type: none"> Angle of refraction (r_1) Angle of emergence (e) Lateral displacement (ML) 	$\frac{1}{2}$ $\frac{1}{2} \times 3$	

	<p style="text-align: center;">OR</p> <p> <small> PE – Incident ray EF – Refracted ray RS – Emergent ray ∠i – Angle of incidence ∠r – Angle of refraction ∠e – Angle of emergence ∠D – Angle of deviation </small> </p> <p>Labelling of $\angle i + \angle e + \angle r$ & $\angle D$</p>	$\frac{1}{2} \times 4$	2
A 24	<ul style="list-style-type: none"> • Brisk effervescence of CO_2 evolved. • $\text{CH}_3\text{COOH} + \text{NaHCO}_3 \rightarrow \text{CH}_3\text{COONa} + \text{CO}_2 + \text{H}_2\text{O}$ 	1 1	2
A 25	<ul style="list-style-type: none"> • The pH value of water given is incorrect. • Its correct value is 7 it is neutral in nature. <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • There will be no reaction in the beakers having Fe strip & Cu strip. • The solution having Al & Zn strip will show reaction / the solution of FeSO_4 having Al & Zn strip will become colourless. 	1+1 1+1	2
A 26	<ol style="list-style-type: none"> Size of the leaf peel should be very small. Put peel immediately in the drop of water. Place cover slip carefully to avoid the air bubbles. It should not be overstained. No fold in the peel <p style="text-align: right;">(Any four)</p>	$\frac{1}{2} \times 4$	2
A 27	<ol style="list-style-type: none"> Soaking of seeds Emergence of radicle Splitting of cotyledons Emergence of plumule <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> Elongation of nucleus Constriction appears due to the division of the cytoplasm 	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ 1 1	2