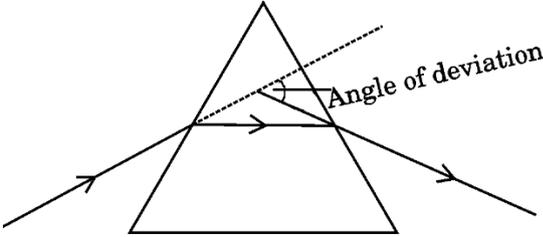
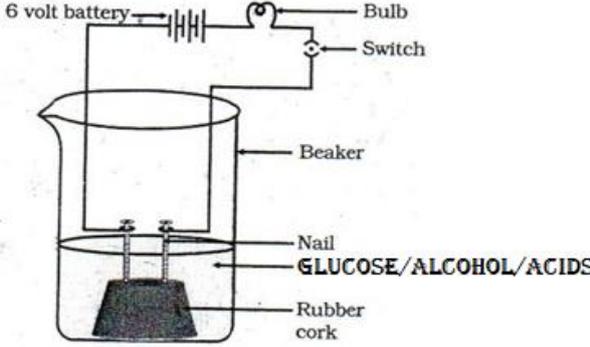
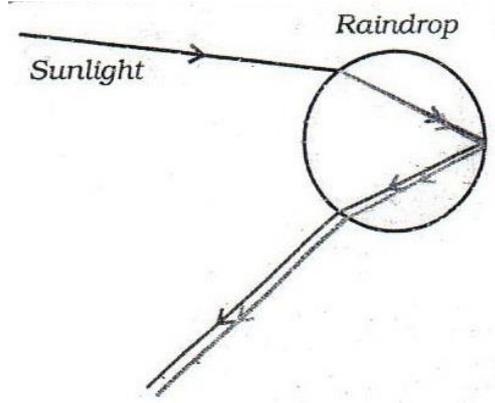
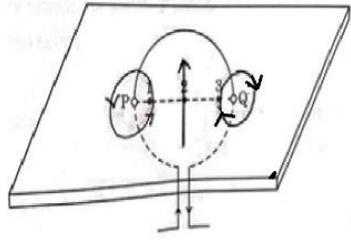


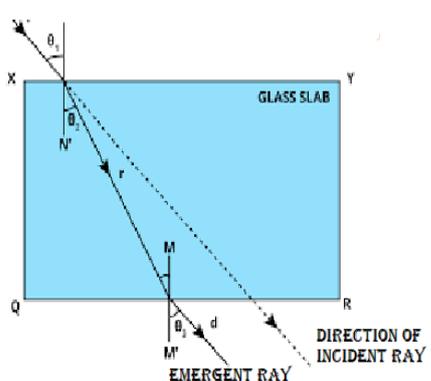
22	(a) (i) H^+ / H_3O^+ (ii) OH^- (b) Dry HCl does not dissociate into hydrogen ions in absence of water.	$\frac{1}{2}$ $\frac{1}{2}$ 1	 2
23	<ul style="list-style-type: none"> • Veins carry deoxygenated blood from different organs and bring it back to the heart. • Because blood flows at low pressure inside veins. 	1 1	 2
24	(a) Tallness depends on the amount of plant hormone, synthesis of plant hormone depends on the efficiency of enzymes (proteins), synthesis of enzymes (proteins) depends on specific DNA sequence(gene). More the synthesis of hormone, more the pea plant will be taller. (b) Gene	1 1	 2
25	(a) Hypermetropia /Farsightedness/Longsightedness. Reasons: (i) Focal length of the eye lens is too long (ii) Eyeball becomes too small. Correction Convex lens /Converging lens <p style="text-align: center;">OR</p> (b) <div style="text-align: center;">  </div> DIAGRAM DIRECTION OF RAYS MARKING OF ANGLE	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{1}{2}$ $\frac{1}{2}$	 2
26	$P = 1000 \text{ W}, V = 230 \text{ V}; \text{ Formula} = P = \frac{V^2}{R}$ $R = \frac{V^2}{P}$ $= \frac{(230)^2}{1000}$ $= 52.9 \Omega$	$\frac{1}{2}$ 1 $\frac{1}{2}$	 2

SECTION C

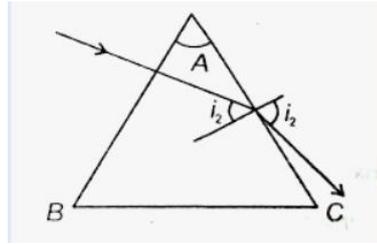
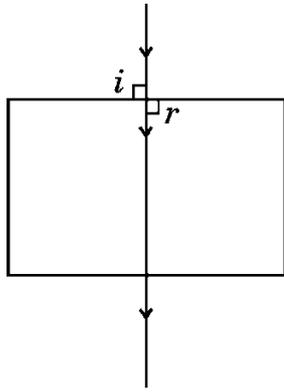
27	<p>(a)</p> <ul style="list-style-type: none"> • A series of metals arranged in the order of their decreasing reactivity/ activity. • By performing displacement reactions • Calcium, Aluminium, Lead, Copper <p>(b) $\text{Fe}_2\text{O}_3 + 2 \text{Al} \longrightarrow \text{Al}_2\text{O}_3 + 2 \text{Fe} + \text{Heat}$</p>	<p>½</p> <p>½</p> <p>1</p> <p>1</p>	<p>3</p>
28	<p>(a) (i) Electricity is passed through an aqueous solution of NaCl (brine), it decomposes to form NaOH. / Chlor-Alkali Process</p> $2 \text{NaCl}(\text{aq}) + 2 \text{H}_2\text{O} \longrightarrow 2 \text{NaOH}(\text{aq}) + \text{Cl}_2 + \text{H}_2$ <p>(ii) When brine reacts with carbon dioxide and ammonia, sodium hydrogen carbonate and ammonium chloride are formed</p> $2 \text{NaCl} + \text{H}_2\text{O} + \text{CO}_2 + \text{NH}_3 \longrightarrow \text{NaHCO}_3 + \text{NH}_4\text{Cl}$ <p>(b)</p> <p style="text-align: center;">OR</p>  <p>Bulb does not glow when solution of alcohol and glucose are taken but glows when acids solution are taken. (Award marks if explained in words)</p> <p>Reason:- Acidic solutions liberate ions but glucose and alcohol do not liberate ions .Hence bulb only glows for acidic solutions.</p>	<p>½</p> <p>1</p> <p>½</p> <p>1</p> <p>2</p> <p>1</p>	<p>3</p>
29	<p>(a) Aerobic – carbon dioxide+water Anaerobic - Lactic Acid</p> <p>(b) Respiration –carbon dioxide Photosynthesis – oxygen</p> <p>(c) Terrestrial Animals – lungs / skin Fish– Gills</p>	<p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p>	<p>3</p>
30	<p>(a) Round, yellow</p> <p>(b) round yellow : 9 round green : 3 wrinkled yellow : 3</p>	<p>1</p> <p>1</p>	<p>3</p>

	wrinkled green : 1 (c) Traits are inherited independently/Independent assortment of the traits.	1	3
31	A rainbow is a natural spectrum appearing in the sky after a rain shower.  (Deduct half mark if arrows are not marked)	1 2	3
32	(a)  Marking magnetic lines for points 1,2 and 3 (b) • Strength of the current in the loop • No. of turns of loop (c) Right hand thumb rule	$\frac{1}{2} \times 3$ $\frac{1}{2} \times 2$ $\frac{1}{2}$	3
33	(a) • The energy captured by plants does not revert to solar input and the energy which passes to the herbivores does not revert back to autotrophs. • As energy moves progressively through the various trophic levels it is no longer available to the previous level. • The energy available at each trophic level gets diminished progressively due to loss of energy at each level. (any two) (b) 100 J • Autotrophs \longrightarrow Primary consumer \longrightarrow secondary consumer 10000 J (1000 J) (100 J)	1x2 $\frac{1}{2}$ $\frac{1}{2}$	

	/ Only 10% energy of the organic matter of previous trophic level is transferred to next trophic level. /10% law		3
SECTION-D			
34	<p>(a) (i) (I) Ag, (II) Al, (III) K, (IV) Cu</p> <p>(ii) Metal oxides which react with both acids as well as bases to produce salts and water are called amphoteric oxides.</p> $\text{Al}_2\text{O}_3 + 6 \text{HCl} \longrightarrow 2 \text{AlCl}_3 + 3 \text{H}_2\text{O}$ $\text{Al}_2\text{O}_3 + 2 \text{NaOH} \longrightarrow 2 \text{NaAlO}_2 + \text{H}_2\text{O}$ <p style="text-align: center;">(Do not deduct marks if equation is not balanced)</p> <p>(iii) Water soluble bases are called Alkalis. NaOH / KOH / Sodium Hydroxide / Potassium Hydroxide (any one)</p> <p style="text-align: center;">OR</p> <p>(b) (i)</p> <p>(I) $2 \text{HgS}(\text{s}) + 3 \text{O}_2(\text{g}) \xrightarrow{\text{Heat}} 2 \text{HgO}(\text{s}) + 2 \text{SO}_2(\text{s})$ (cinnabar)</p> $2 \text{HgO}(\text{s}) \xrightarrow{\text{Heat}} 2 \text{Hg}(\text{l}) + \text{O}_2(\text{g})$ <p>(II)</p> $2 \text{CuS} + 3 \text{O}_2(\text{g}) \xrightarrow{\text{Heat}} 2 \text{Cu}_2\text{O}(\text{s}) + 2 \text{SO}_2(\text{g})$ $2 \text{Cu}_2\text{O} + \text{Cu}_2\text{S} \xrightarrow{\text{Heat}} 6 \text{Cu}(\text{s}) + \text{SO}_2(\text{g})$ <p style="text-align: center;">(Deduct half mark each for unbalanced equation)</p> <p>(ii)</p> <p>(I) Silver sulphide /Ag₂S (II) Basic Copper carbonate/ Cu(OH)₂. CuCO₃</p>	<p>½ ½ ½ ½</p> <p>1</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>½</p> <p>½</p>	5
35	<p>(a)</p> <p>(i) 'X' – Stigma 'Y' – Anther</p> <p>(ii) Pollen grains</p> <p>(iii) Pollination</p> <p>(iv) After the transfer of pollen grains from anther into stigma, a pollen tube grows out of the pollen grain and travels through the style to reach the ovary. Male germ cell fuses with the</p>	<p>½+ ½</p> <p>1</p> <p>1</p>	

	<p>female germ cell to form a zygote which divides several times to form an embryo within the ovule. The ovule develops a tough coat and is gradually converted into a seed.</p> <p style="text-align: center;">OR</p> <p>(b)</p> <p>(i) Binary fission</p> <p>(ii) <u>Leishmania</u></p> <p>(iii) Produces a greater number of offsprings within a short period of time /Ensures better chances of survival of organisms in unfavorable conditions/Formation of genetically similar organisms /gamete formation is not required.</p> <p style="text-align: right;">(any two)</p> <p>(iv)</p> <p>Budding</p> <p>A bud develops as an outgrowth due to repeated cell division at a specific site, develop into tiny individuals, and after being matured, detach from parent body and become new independent individuals.</p> <p style="text-align: center;">(Award marks if explained through labelled diagram) (or any other mode of reproduction)</p>	<p>2</p> <p>1/2</p> <p>1/2</p> <p>1+1</p> <p>1</p> <p>1</p>	<p>5</p>
<p>36</p>	<p>(a) (i)</p> <p>The extent of bending of the ray of light at the opposite parallel faces of the rectangular glass slab is equal and opposite. This is why the ray emerges parallel to the incident ray.</p> <div style="text-align: center;">  </div>	<p>1</p> <p>1</p>	

NORMAL INCIDENCE



1

(ii) $u = -30 \text{ cm}$, $f = -20 \text{ cm}$

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f} \quad \text{or} \quad \frac{1}{v} = \frac{1}{u} + \frac{1}{f}$$

1/2

$$\frac{1}{v} = \frac{1}{-30 \text{ cm}} + \frac{1}{-20 \text{ cm}}$$

1/2

$$= \frac{1}{-12 \text{ cm}} \quad \text{or} \quad v = -12 \text{ cm}$$

1

The image is at -12 cm on the same side of the lens.

OR

(b)

(i)

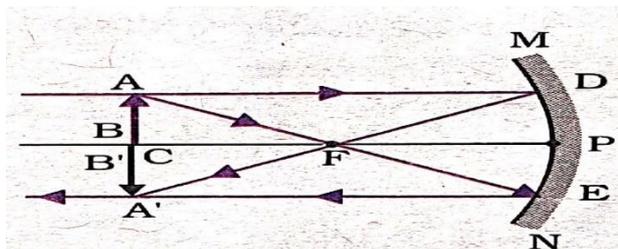
Type of Image

Real and Inverted (when candle is beyond F)/ Virtual and Erect (when candle is between P and F)

1

As the object is moved gradually away from the pole of the mirror, the image gets diminished.

1



1

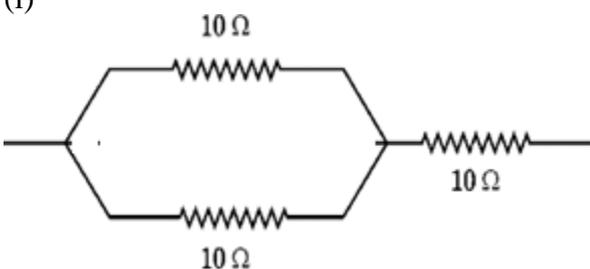
(ii) Object distance, $u = -6.00 \text{ m}$

Image distance, $v = ?$

Focal length, $f = 3.00 \text{ m}$

$$\frac{1}{v} + \frac{1}{u} = \frac{1}{f} \quad \text{or} \quad \frac{1}{v} = \frac{1}{f} - \frac{1}{u}$$

1/2

	Electrical signal – travels through a nerve cell. (Any other)	1	4
39	<p>(a) Graph A</p> <p>(b) Graph D,</p> <p>(c) (i)</p>  <p style="text-align: center;"> $R = \frac{R_1 R_2}{R_1 + R_2} + R_3$ $R = \left(\frac{10 \times 10}{10 + 10} + 10 \right) \Omega = 5 \Omega + 10 \Omega = 15 \Omega$ </p> <p style="text-align: center;">OR</p> <p>(c)</p> <p>(ii) • $I = \frac{V}{R} = \frac{6V}{(0.1 + 0.2 + 0.3 + 0.4 + 0.5) \Omega} = \frac{6V}{1.5 \Omega} = 4.0 A$</p> <p>• same current flows when resistors are connected in series.</p>	<p>1</p> <p>1</p> <p>1</p> <p>1/2</p> <p>1/2</p> <p>1</p> <p>1</p>	<p>4</p>