

22	<p>(a)</p> <ul style="list-style-type: none"> • Test Tube B • Blue-black <p>(b) Starch is digested by saliva in test tube A, so no change in colour . Alternate answer Saliva contains enzyme which converts starch solution to sugar, so no change in colour.</p>	<p>½ ½</p> <p>1</p>	2								
23	<ul style="list-style-type: none"> • Egg cell/Ovum and sperm • <table border="1" data-bbox="267 640 1213 804"> <thead> <tr> <th>Egg cell</th> <th>Sperm</th> </tr> </thead> <tbody> <tr> <td>Large in size</td> <td>Small in size</td> </tr> <tr> <td>Non-motile</td> <td>Motile</td> </tr> <tr> <td>Spherical in shape</td> <td>Elongated</td> </tr> </tbody> </table> <p style="text-align: right;">(any two)</p>	Egg cell	Sperm	Large in size	Small in size	Non-motile	Motile	Spherical in shape	Elongated	<p>½ , ½</p> <p>½ , ½</p>	2
Egg cell	Sperm										
Large in size	Small in size										
Non-motile	Motile										
Spherical in shape	Elongated										
24	<p>(a) Laws of Refraction of light :</p> <p>(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.</p> <p>(ii) The ratio of the sine of angle of incidence to the sine of angle of refraction is a constant, for the light of a given colour and for the given pair of media. Note: If a student writes $\frac{\sin i}{\sin r} = \text{constant}$ instead of statement, award ½ mark only)</p> <p style="text-align: center;">OR</p> <p>(b) Absolute refractive index of a medium is the ratio of speed of light in vacuum to the speed of light in the medium.</p> <p>Given: $c = 3 \times 10^8 \text{ m/s}$; $n_m = 1.5$; $v_m = ?$</p> <p>Absolute refractive index of a medium (n_m)</p> $= \frac{\text{speed of light in vacuum}}{\text{speed of light in medium}} = \frac{c}{v_m}$ $v_m = \frac{c}{n_m} = 2 \times 10^8 \text{ m/s}$	<p>1</p> <p>1</p> <p>1</p> <p>½</p> <p>½</p>	2								

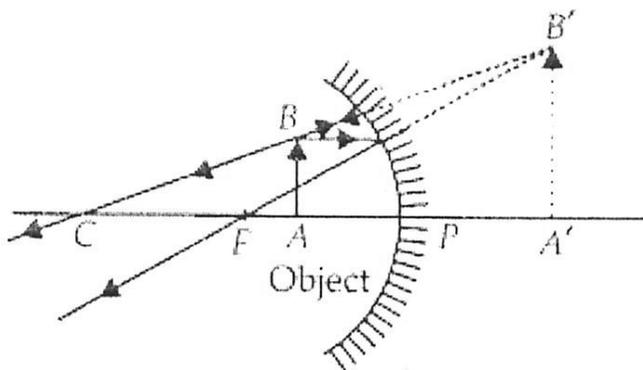
	(b) Testis – Anther Ovary – Ovary	$\frac{1}{2}$ $\frac{1}{2}$	3
29	(a) Observations: <ul style="list-style-type: none"> • Formation of bubbles at both the electrodes. • These bubbles displace water in both the test tubes. • Volume of gas collected at Cathode is twice the volume of gas collected at anode. <p style="text-align: right;">(Any two)</p> <p>(b) Cathode : Anode: H₂: O₂ 1: 8</p>	1,1 1	3
30	<p style="text-align: center;">Diagram- Refer Figure 3·12 page 52 NCERT</p> <p style="text-align: center;">2 Labellings : Electrodes and Electrolyte.</p> <ul style="list-style-type: none"> • When a current is passed through aqueous solution of CuSO₄, the pure metal from the anode dissolves in the electrolyte (CuSO₄ solution) and equivalent amount of pure copper from CuSO₄ solution is deposited on the cathode. <p>Alternate answer: At anode: Cu -----→Cu²⁺ +2e⁻ At Cathode: Cu²⁺ +2e⁻ -----→Cu</p>	1 1	3
31	(a) Here $f = -12$ cm, $u = -8$ cm, $v = ?$	$\frac{1}{2}$	
	Mirror formula $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$	$\frac{1}{2}$	

$$\therefore \frac{1}{v} = \frac{1}{f} - \frac{1}{u} = \frac{1}{-12 \text{ cm}} - \frac{1}{-8 \text{ cm}}$$

$$= + \frac{1}{24 \text{ cm}}$$

$$v = + 24 \text{ cm}$$

Image is formed at 24 cm behind the mirror.



Note: Deduct ½ mark if direction of rays is not shown.

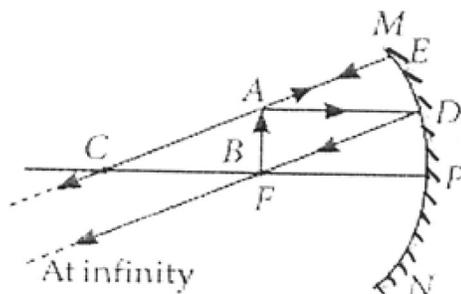
OR

(b)(i) Object is placed at 30 cm from the mirror.

Note: Award marks if expressed in the form of calculations.

Reason: Since magnification is -1, Image distance(v)= object distance(u)

(ii) Image is formed at infinity.



Note: Deduct ½ mark if direction of rays is not shown

1

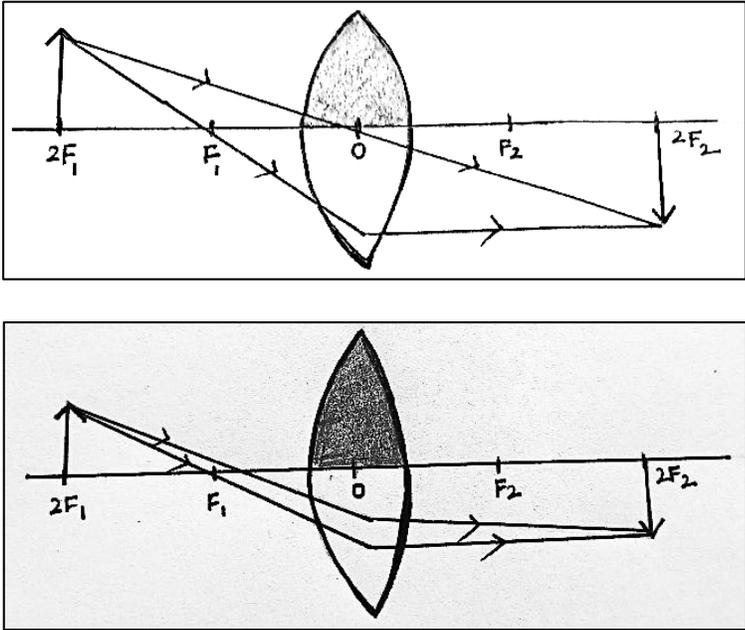
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½

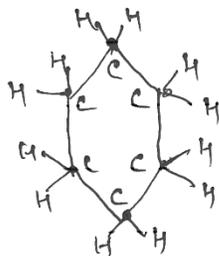
½

1

1

32	<p>(a)</p> <ul style="list-style-type: none"> 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. Direction of force vertically downwards/Into the page <p>(b) Electron will experience force in vertically upward direction/ will deflect out of the page.</p> <ul style="list-style-type: none"> Reason: Direction of flow of electrons is opposite to the direction of current in AB. 	1 ½ ½ 1	3
33	<p>Phenomenon – Biological Magnification /Biomagnification</p> <ul style="list-style-type: none"> Pesticides are washed down into the soil and water bodies. From the soil pesticides are absorbed by crop plants along with water and minerals and enter the food chain. These chemicals are non-biodegradable and get accumulated progressively at each trophic level. As human beings occupy the top level in any food chain, the maximum concentration of these chemicals gets accumulated in our bodies. 	1 ½ ½ ½ ½	3
SECTION D			
34	<p>(a)</p>  <p>Note: Any one of the above drawn ray diagrams should be marked.</p>	1	

	<p>When the upper half of lens is covered:</p> <ul style="list-style-type: none"> • Position of image: at 2F on the other side of the lens • Nature of image: Real and inverted • Observable difference in the image, if the lens is uncovered The brightness of the image will increase • Reason: More number of rays will pass through the lens to form the image. <p>(b) Here $u = -30$ cm, $f = -15$ cm, $v = ?$</p> $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$ $\frac{1}{v} = \frac{1}{f} + \frac{1}{u}$ $= \frac{1}{-15} + \frac{1}{-30}$ $v = -10 \text{ cm}$	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>1</p>	5
35	<p>(a)</p> <p>(i)</p> <ul style="list-style-type: none"> • Carbon cannot form C^{4+} cations because removal of 4 electrons from a carbon atom would require a large amount of energy and it cannot form C^{4-} anion because it would be difficult for the nucleus with 6 protons to hold 10 electrons. • Thus it shares electrons to form covalent compounds. <p>(ii)</p> <ul style="list-style-type: none"> • A series of compounds in which the same functional group substitutes for hydrogen in a carbon chain / series of compounds having same functional group and similar chemical properties. • CH_3CHO, C_2H_5CHO (any other consecutive members) <p>(iii) Structure of cyclohexane (C_6H_{12})</p>	<p>1</p> <p>1</p> <p>1</p> <p>$\frac{1}{2}, \frac{1}{2}$</p>	

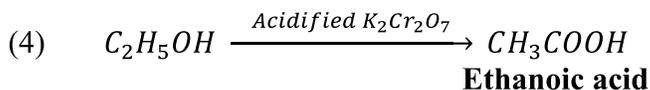
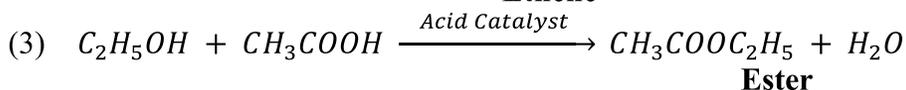
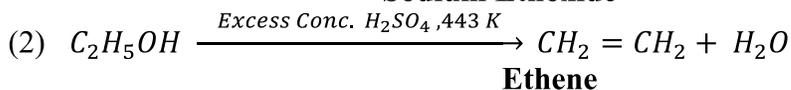
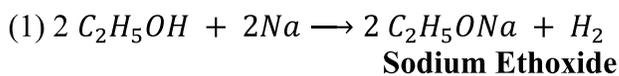


OR

(b)

(i) Ethanol – C_2H_5OH

(ii)



NOTE: Name of the product for each reaction is given in bold letters under the reaction.

1

½, ½

½, ½

½, ½

½, ½

½, ½

5

36

(a) (i)

Hormonal coordination in Plants	Hormonal coordination in Animals
1) By simple diffusion	Transported through blood to the target organ
2) No specialised glands involved.	Hormone released by Endocrine glands.

- (ii) (1) Cerebrum/forebrain,
 (2) cerebellum/hindbrain
 (3) medulla/ hindbrain
 (4) hypothalamus/forebrain.

- (iii) Brain – Bony box/skull/cranium/fluid filled balloon in skull,
 Spinal cord – Backbone/Vertebral column.

OR

1,1

½ x 4

½

½

	<p>(b) (i) Plant growth movements in response to stimuli in a particular direction / directional movements due to light, gravity etc.</p> <p>(1) Plant growth inhibitor: Abscisic Acid</p> <p>(2) Promotes cell division – Cytokinins</p> <p>(ii) When the tendrils come in contact with any support, auxins move away from the point of contact of the support. More growth occurs on the side away from the support. As a result, unequal growth occurs on its two sides and thus tendrils coil/ circle around the support.</p> <ul style="list-style-type: none"> • Auxins 	<p>1</p> <p>½</p> <p>½</p> <p>2</p> <p>1</p>	<p>5</p>
SECTION E			
37	<p>(a)</p> <ul style="list-style-type: none"> • Higher resistivity than pure metals • Do not oxidise (burn) at high temperature. <p>(b)</p> <ul style="list-style-type: none"> • Higher resistivity than pure metals • Low melting point. <p>(c)</p> <ul style="list-style-type: none"> • Heating effect of electric current • When high current flows in the circuit accidentally, the fuse wire melts and breaks the circuit . <p style="text-align: center;">OR</p> <p>(c) P = 1100 W; V = 220 V, I = ?</p> <p>P = VI</p> $I = \frac{P}{V} = \frac{1100 \text{ W}}{220 \text{ V}} = 5 \text{ A}$ <ul style="list-style-type: none"> • No effect on the fuse of 5A rating. 	<p>½ , ½</p> <p>½ , ½</p> <p>1</p> <p>1</p> <p>½</p> <p>½</p> <p>1</p>	<p>4</p>
38	<p>(a) Acid – HCl, Base – NaOH</p> <p>(b) Cation Ca²⁺ Anion SO₄²⁻,</p>	<p>½, ½</p> <p>½ , ½</p>	

	<p>(c) Salts having same cations but different anions belong to the same family of salts. e.g. sodium chloride (NaCl) and Washing Soda/sodium carbonate (Na₂CO₃) both have Na⁺ as cation.</p> <p style="text-align: center;">OR</p> <p>c) • A scale for measuring hydrogen ion (H⁺) concentration in a solution is called pH scale.</p> <ul style="list-style-type: none"> • Potassium Sulphate / K₂SO₄ <ul style="list-style-type: none"> • pH = 7 	2					
		1					
		½					
		½	4				
39	<p>(a) All cut pieces of the two planaria will form a complete organism.</p> <p>(b) Hydra</p> <p>(c) Specialised cells proliferate to make a large number of cells. This mass of cells change to make different cell types and tissues. These changes take place in an organised sequence and is called development.</p> <p style="text-align: center;">OR</p> <p>(c)</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;">Regeneration</td> <td style="width: 50%; text-align: center;">Fragmentation</td> </tr> <tr> <td>Specialised cells proliferate to form new cells which multiply and form a a new individual</td> <td>Each piece/fragment grows by cell-to-cell division to form a new organism.</td> </tr> </table>	Regeneration	Fragmentation	Specialised cells proliferate to form new cells which multiply and form a a new individual	Each piece/fragment grows by cell-to-cell division to form a new organism.	1	
Regeneration	Fragmentation						
Specialised cells proliferate to form new cells which multiply and form a a new individual	Each piece/fragment grows by cell-to-cell division to form a new organism.						
		1					
		2					
		1,1					
			4				
