

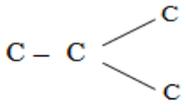
**EXAMINATION, 2025**

**SOLUTIONS**

**CLASS: X [SCIENCE (Subject Code–086)]**

**[ Paper Code:31/5/3]**

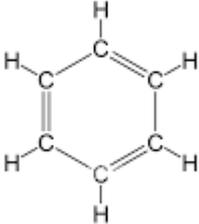
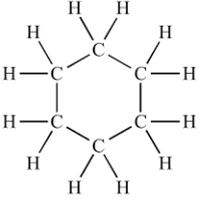
**Maximum Marks: 80**

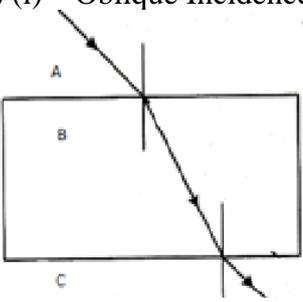
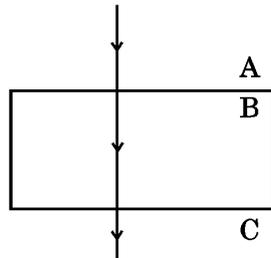
Q. No.	EXPECTED ANSWERS / VALUE POINTS	Marks	Total Marks
<b>SECTION A</b>			
1	(A) /Impure copper, pure copper, acidified copper sulphate solution	1	1
2	(B) / C – C – C – C ; <div style="text-align: center;">  </div>	1	1
3	(D) / 2, 2, 4, 1	1	1
4	(C) /Zinc and Hydrogen	1	1
5	(A) / Carbon dioxide	1	1
6	(D) / Zinc	1	1
7	(C) /(i) and (ii)	1	1
8	(D) /Cytoplasm and Mitochondria	1	1
9	(B) / Cytokinins and Abscisic acid	1	1
10	(C) / Fragmentation and regeneration	1	1
11	(B) / Hunger	1	1
12	(B) / (iii), (ii), (iv), (i), (v)	1	1
13	(B) / Excessive use of disposable cups and plates	1	1
14	(C) / Lakes and gardens	1	1
15	(C) / b and e	1	1
16	(B) / Between pole and focus of the mirror	1	1
17	(D) / Assertion (A) is false, but Reason (R) is true	1	1
18	(C) / Assertion (A) is true, but Reason (R) is false.	1	1
19	(B) / Both Assertion (A) and Reason (R) are true, but Reason (R) is <i>not</i> the correct explanation of Assertion (A).	1	1
20	(A) / Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).	1	1
<b>SECTION B</b>			
21	(a) Convex mirror  (b) Positive and less than 1  (c)+ 40 cm or 40 cm	½  ½ +½  ½	2

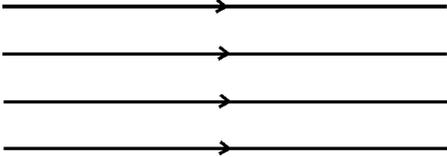
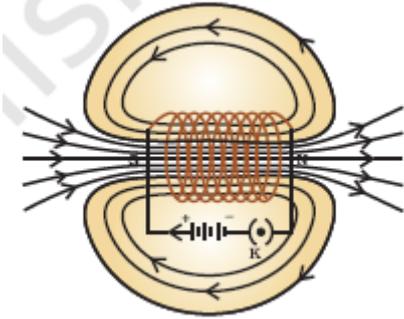
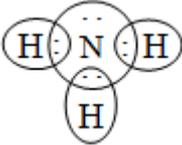




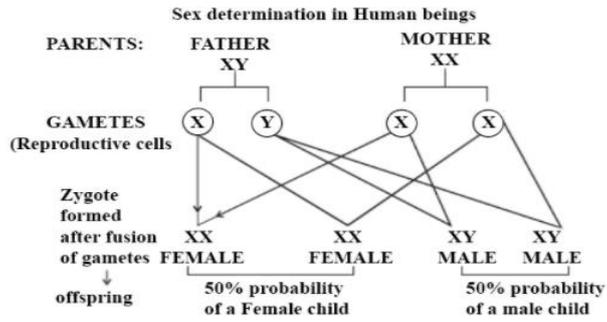
32	<p>A) A: Metal M will get corroded partly The part of metal M outside oil will get corroded whereas the part of the metal M inside the oil will not corrode as it cannot react with moist air.</p> <p>B: Metal M will not undergo corrosion. It is inside the oil and not exposed to moist air.</p> <p>C: Metal M will not undergo corrosion as moisture is absent in test tube C</p> <p style="text-align: center;"><b>OR</b></p> <p>(B) (a) Al = 2, 8, 3</p> $  \begin{array}{c}  \text{N} = 2, 5 \\  \begin{array}{ccc}  \begin{array}{c} \bullet \\ \text{Al} \bullet \\ \bullet \end{array} & \begin{array}{c} \xrightarrow{\quad} \\ \xrightarrow{\quad} \\ \xrightarrow{\quad} \end{array} & \begin{array}{c} \times \times \\ \text{N} \times \\ \times \end{array} \longrightarrow [\text{Al}^{3+}] \left[ \begin{array}{c} \times \times \\ \text{N} \times \\ \times \end{array} \right]^{3-}  \end{array}  \end{array}  $ <p>(b) Ionic compounds have strong force of attraction between the positive and negative ions /Strong interionic forces of attraction/ Strong electrostatic forces of attraction.</p>	<p><math>\frac{1}{2} + \frac{1}{2}</math></p> <p><math>\frac{1}{2} + \frac{1}{2}</math></p> <p><math>\frac{1}{2} + \frac{1}{2}</math></p> <p>2</p> <p>1</p>	<p>3</p>
33	<p>• <math>\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}</math> When baking soda is heated sodium carbonate is obtained and recrystallisation of sodium carbonate gives washing soda.</p> $  2 \text{NaHCO}_3 \xrightarrow{\text{heat}} \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2  $ $  \text{Na}_2\text{CO}_3 + 10 \text{H}_2\text{O} \longrightarrow \text{Na}_2\text{CO}_3 \cdot 10 \text{H}_2\text{O}  $ <p>Uses:</p> <p>(i) In glass / soap / paper industry (ii) In manufacture of borax (iii) As cleansing agent for domestic purpose (iv) Removing permanent hardness of water</p> <p style="text-align: right;">(Any Two)</p>	<p>1</p> <p>1</p> <p><math>\frac{1}{2} + \frac{1}{2}</math></p>	<p>3</p>
<b>SECTION D</b>			
34	<p>(A) (a) Functional group: The element replacing hydrogen in a carbon compound is called heteroatom. These heteroatoms confer special properties to the compound are known as functional groups.</p> <p>(i) Functional group present in propanol – OH/ Alcohol</p> <p style="text-align: center;">O   </p> <p>(ii) Functional group present in propanone – C – / Ketone</p> <p>(b) (i) Dehydration</p> $  \begin{array}{ccc}  \text{C}_2\text{H}_5\text{OH} & \xrightarrow[\text{Conc. H}_2\text{SO}_4]{443 \text{ K}} & \text{C}_2\text{H}_4 + \text{H}_2\text{O} \\  \text{(ethanol)} & \text{(excess)} & \text{(ethene)}  \end{array}  $	<p>1</p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p>1</p>	

	<p>(ii) Oxidation</p> $\text{C}_2\text{H}_5\text{OH} \xrightarrow[\text{heat}]{\text{Alkaline KMnO}_4} \text{CH}_3\text{COOH}$ <p style="text-align: center;">Ethanoic Acid</p> <p style="text-align: center;"><b>OR</b></p> <p>(B) (a) Benzene and Cyclohexane <span style="float: right;">(Any other)</span></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Benzene</p> </div> <div style="text-align: center;">  <p>Cyclohexane</p> </div> <div style="text-align: right;">(Any one)</div> </div> <p>(b) • Soaps are sodium salts of long chain fatty acids. Two ends of soap molecule have different properties. The ionic end is hydrophilic and interacts with water whereas the hydrocarbon chain is hydrophobic and it interacts with oil/ dirt.</p> <p>• The hydrocarbon chains are towards the oil droplet while the ionic ends are oriented towards water (i.e. it forces outside). This forms an emulsion in water. The soap micelle thus helps in pulling out the dirt in water and the clothes are washed.</p>	<p>1/2</p> <p>1</p> <p>1+1</p> <p>1</p> <p>1+1</p>	5								
35	<p>(A) (a)(i) Iodine is necessary for the thyroid gland to make thyroxin hormone, its deficiency causes goitre.</p> <p>(ii) Deficiency of growth hormone in childhood causes dwarfism.</p> <p>(iii) Secretion of testosterone during puberty in males.</p> <p>(b) • Hormones or chemical compounds can potentially reach all cells of body steadily and persistently.</p> <p>• Hormones help to coordinate growth, development and responses to environment</p> <p style="text-align: center;"><b>OR</b></p> <p>(B)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">VOLUNTARY ACTION</th> <th style="padding: 5px;">INVOLUNTARY ACTION</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Thinking is involved</td> <td style="padding: 5px;">Does not involve thinking</td> </tr> <tr> <td style="padding: 5px;">Controlled by Forebrain</td> <td style="padding: 5px;">Controlled by Hindbrain</td> </tr> <tr> <td style="padding: 5px;">It occurs according to our will</td> <td style="padding: 5px;">It does not occur according to our will (Any other)</td> </tr> </tbody> </table> <p style="text-align: right; margin-right: 50px;">(Any two)</p> <p>(b) • Reflex action: Sudden action in response to stimulus in the environment.</p> <p>• Stimulus → Receptors → Sensory Neurons → Spinal Cord/ Brain</p> <div style="text-align: center; margin-left: 200px;"> <p>↓</p> <p>Effector muscle/Gland ← motor neuron</p> </div>	VOLUNTARY ACTION	INVOLUNTARY ACTION	Thinking is involved	Does not involve thinking	Controlled by Forebrain	Controlled by Hindbrain	It occurs according to our will	It does not occur according to our will (Any other)	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1+1</p> <p>1</p> <p>2</p>	5
VOLUNTARY ACTION	INVOLUNTARY ACTION										
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36	<p>(A) (a) (i) Speed of light in A and B is same whereas the speed of light in C is greater than that of A and B.</p>	<p>1/2+1/2</p>									

	<p>(ii) Optical density of A and B is same whereas optical density of C is less than that of A and B.            Since the ray of light does not bend while passing from A to B the refractive indices of A and B are same and since it bends away from the normal while passing from B to C the refractive index of C is less than that of A and B. / Refractive index of a medium is inversely proportional to the speed of light in that medium.</p> <p>(b) (i) Oblique Incidence</p>  <p>(ii) Normal Incidence</p>  <p style="text-align: center;"><b>OR</b></p> <p>(B) (a) <math>2f = 40 \text{ cm}</math>  <math>\Rightarrow f = 20 \text{ cm}</math></p> <p>Reason: When an object is placed at <math>2f</math> (<math>-40 \text{ cm}</math>) of a convex lens its real image formed at <math>2f</math> (<math>+40 \text{ cm}</math>) on the other side of the lens.</p> <p>(b) <math>m = \frac{v}{u} = \frac{+60 \text{ cm}}{-30 \text{ cm}} = -2</math></p> <p>(c) Observation No.1- image is virtual and erect            Observation No.2 - image is real and inverted</p>	<p><math>\frac{1}{2} + \frac{1}{2}</math></p> <p>1</p> <p>5</p>	
<b>SECTION E</b>			
37	<p>(a) The direction of the magnetic field is taken to be the direction in which a north pole of the compass needle moves inside it.</p> <p>(b) Closer the field lines stronger is the magnetic field.</p> <p>(c) (A)</p> <p>(i) It would mean that at the point of intersection, the compass needle would point towards two directions, which is not possible.</p>	<p>1</p> <p>1</p> <p>1</p>	

	<p>(ii)</p>  <p>Equidistant parallel lines (Award marks if magnetic field is shown through a solenoid)</p> <p style="text-align: center;"><b>OR</b></p> <p>(B)•</p>  <p>• Uniform Magnetic Field</p>	1	
38	<p>(a) It shall gain or share 2 electrons to attain its nearest noble gas configuration.</p> <p>(b) (i) The number of single covalent bonds- 10 (ii)The number of double covalent bonds-1</p> <p>(c) (A)</p>  <p style="text-align: center;"><b>OR</b></p> <p>(B) Carbon cannot gain or lose 4 electrons to complete its octet as a large amount of energy is involved. /</p> <p>(i) It could gain four electrons forming <math>C^{4-}</math> anion. But it would be difficult for the nucleus with six protons to hold on to ten electrons.</p> <p>(ii) It could lose four electrons forming <math>C^{4+}</math> cation. But it would require a large amount of energy to remove four electrons leaving behind a carbon cation with six protons in its nucleus holding on to just two electrons.</p>	1 $\frac{1}{2} + \frac{1}{2}$ 2 2	4
39	<p>(a)Chromosomes carry genes which control the traits of an organism. /Chromosomes contain information for inheritance of features from parents to next generation in form of DNA (deoxyribonucleic acid) molecules</p> <p>(b) Men have one normal sized X chromosome while Y chromosome is short.</p>	1 1	

(c) (A)



2

**OR**

(B) • In a few reptiles; the temperature at which fertilized eggs are kept determine the sex of offspring.

1

• In snails; the individual can change sex, indicating that is not genetically determined.

1

4