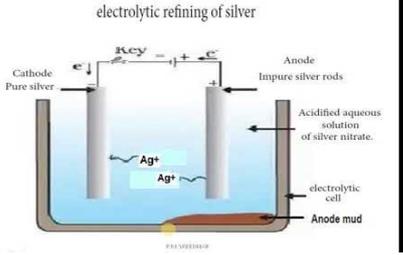


**BANGALORE SAHODAYA SCHOOLS COMPLEX ASSOCIATION****PRE-BOARD EXAMINATION (2023-2024)***Marking Scheme (2023-24)**Class-X**Science (Subject Code – 086)**Set-2*

<i>Q. No.</i>	<i>Answer</i>	<i>Marks</i>
<b>Section–A</b>		
1	c) $Pb(NO_3)_2$ , $NO_2$ , $PbO$	1
2	b) B	1
3	c) A has pH greater than 7 and B has pH less than 7	1
4	d) (ii) and (iv)	1
5	b) Insoluble in water	1
6	b) (i) and (iv)	1
7	a) Copper hydroxide and Copper carbonate	1
8	b)	1
9	c) It's a chemical messenger from a gland	1
10	c) A and B	1
11	c) 2 and 3 only	1
12	b) Water moves through xylem in the plant	1
13	c) Convex lens	1
14	b) Towards the base in both cases	1
15	b) Unidirectional and cyclic	1
16	d) Solar energy	1
17	c) A is true but R is false	1
18	a) Both A and R are true, and R is the correct explanation of A	1
19	a) Both A and R are true, and R is the correct explanation of A.	1
20	d) Assertion is false but Reason is true	1
<b>Section–B</b>		
21	i) M- Ag , Gas is $Cl_2$ . [0.5 +0.5]	2
	ii) $2AgCl \rightarrow 2Ag + Cl_2$ ; Photolytic decomposition. [0.5 + 0.5]	
22	i) Zygote, mitotic division [0.5+0.5]	2
	ii) Placenta-Disc like tissue, contains villi on the embryos side and blood spaces on the mothers' side. [1]	

23	<p>Bile salts help to break large fat globules to small fat globules/emulsifies fats to increase efficiency of enzyme action [1]</p> <p>Lipase in pancreatic juice convert fat to fatty acids and glycerol [1]</p> <p style="text-align: center;"><b>OR</b></p> <p>i) Renal artery carries blood towards the kidneys, renal vein carries blood away from the kidneys towards the body [1]</p> <p>ii) Renal artery carries blood with nitrogenous waste and oxygen, renal vein carries blood without nitrogenous waste and oxygen [1]</p>	2
24	<p>i) Refractive Index of a medium (n) = Velocity of light in vacuum(c) / Velocity of light in the medium(v) [0.5]</p> <p><math>n = c \div v</math></p> <p><math>n = 2</math> [0.5]</p> <p>ii) The refracted ray bends towards normal. <math>n_1 &gt; n_2</math> [0.5+0.5]</p>	2
25	<p>i) The magnetic field lines produced is into the plane of the paper at R and out of plane of paper at S. [0.5+0.5]</p> <p>ii) Maxwells Right hand thumb rule. The thumb is aligned in the direction of the current and the direction in which the fingers are wrapped around the wire will give the direction of the magnetic field. [1]</p> <p style="text-align: center;"><b>OR</b></p> <p>i) Alloys have higher resistivity than constituent metals [0.5]</p> <p>They do not oxidise readily at high temperatures [0.5]</p> <p>ii) Parallel connection [0.5]</p> <p>If one device stops working, it will not affect the working of the other devices. They will also be using the full potential of the battery as they are connected in parallel (Any one) [0.5]</p>	2
26	<p>i) Spinach → caterpillar → blackbird → Eagle (no marks for incomplete chain) [1]</p> <p>ii) Less food for black birds, black birds die</p> <p>Thus less food for eagles, eagles die [0.5]</p> <p>Biomagnification in consumers [0.5]</p>	2

**Section-C**

<p>27</p>	<p>i) Anode- impure silver; Cathode- pure silver; electrolyte -aqueous solution of AgNO<sub>3</sub> [1.5]</p> <p>ii)</p> <div style="text-align: center;">  </div> <p style="text-align: right;">[1.5]</p>	<p>3</p>
<p>28</p>	<p>i) Na<sub>2</sub>CO<sub>3</sub>. 10H<sub>2</sub>O ; washing soda [0.5+0.5]</p> <p>ii) NaHCO<sub>3</sub> (heat) → Na<sub>2</sub>CO<sub>3</sub> + H<sub>2</sub>O + CO<sub>2</sub> [1]  Na<sub>2</sub>CO<sub>3</sub> + 10H<sub>2</sub>O → Na<sub>2</sub>CO<sub>3</sub>. 10H<sub>2</sub>O. [0.5]</p> <p>iii) Basic. [0.5]</p> <p style="text-align: center;"><b>OR</b></p> <p>i) Plaster of paris or calcium sulphate hemihydrate; CaSO<sub>4</sub>.1/2H<sub>2</sub>O [0.5+0.5]</p> <p>ii) Heating gypsum at 373K  CaSO<sub>4</sub>.2H<sub>2</sub>O → CaSO<sub>4</sub>.1/2H<sub>2</sub>O + 3/2H<sub>2</sub>O. [1]</p> <p>iii) Converts into gypsum by absorbing water from atmosphere. [1]</p>	<p>3</p>
<p>29</p>	<p>i) Trends</p> <p>There is an initial rise in glucose at the start of the test [0.5]</p> <p>The glucose level falls earlier for the healthy person (after 50 mins) but much later (after 100mins) for the diabetic patient [0.5]</p> <p>Explanation</p> <p>Increase in glucose leads to increased release of insulin from the pancreas of a healthy person which brings down the blood glucose level [0.5]</p> <p>In a diabetic the pancreas releases insufficient hence the blood glucose levels are high for a long time [0.5]</p> <p>ii) It is regulated by feedback mechanism [0.5]</p> <p>When the blood glucose level rise, its detected by cells of the pancreas which respond by producing more insulin. As blood sugar falls, insulin secretion is reduced. [0.5]</p>	<p>3</p>

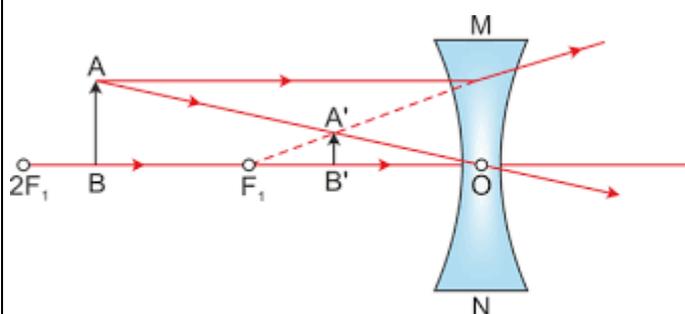
30	i) Axial round [0.5] ii) Axial round, axial wrinkled, terminal round, terminal wrinkled [1] iii) 9:3:3:1 [0.5] Law of independent assortment: When there are two pairs of contrasting characters, the distribution of factors of each pair in the gametes is independent of the distribution of other pair of characters.(or any other similar explanation) [1] (Punnet square is not necessary)	3
31	The ability of a lens to diverge or converge the ray of light after refraction [0.5] Here $f_2=10\text{cm}$ , $P_2=100/f_2=100/10=+10\text{D}$ [1] $P=5\text{D}$ (given) $P_1+P_2=P$ [0.5] $P_1+10=5$ , $P_1=5-10= -5\text{D}$ [0.5] $f_1=100/P_1= 100/-5= -20\text{cm}$ [0.5]	3
32	i) $R=1+2=3\Omega$ $I=V/R=9/3=3\text{A}$ [0.5] $P=I^2R=3\times3\times2=18\text{W}$ [1] ii) $P=V^2/R=6\times6/2=18\text{W}$ [1] Power is the same [0.5]	3
33	i) The red and the black wire [1] ii) There is a drastic increase in the current [1] Reason: The resistance in the circuit decreases. [1]	3
<b>Section–D</b>		
34	i) C- $\text{CH}_3\text{COOH}$ ; Ethanoic acid A – $\text{C}_2\text{H}_5\text{OH}$ ; Ethanol S – $\text{CH}_3\text{COOC}_2\text{H}_5$ ; Ethyl ethanoate. (if any one, name or formula is mentioned) [1.5] ii) $\text{CH}_3\text{COOH} + \text{Na} \rightarrow \text{CH}_3\text{COONa} + \text{H}_2$ . [1]  <div style="text-align: center;">Conc. <math>\text{H}_2\text{SO}_4</math></div> iii) $\text{CH}_3\text{COOH} + \text{C}_2\text{H}_5\text{OH} \xrightarrow{\text{Conc. H}_2\text{SO}_4} \text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O}$ . [1] iv) $\text{CH}_3\text{COOC}_2\text{H}_5 + \text{NaOH} \rightarrow \text{CH}_3\text{COONa} + \text{C}_2\text{H}_5\text{OH}$ ; Saponification [1.5] <div style="text-align: center;"><b>OR</b></div>	5

	<p>i) A - C<sub>2</sub>H<sub>5</sub>OH; Ethanol. B- CH<sub>3</sub>COOH; Ethanoic acid [1.5]</p> <p>C- C<sub>2</sub>H<sub>4</sub>; Ethene</p> <p style="text-align: center;">alk KMnO<sub>4</sub></p> <p>ii) C<sub>2</sub>H<sub>5</sub>OH + [O] -----→ CH<sub>3</sub>COOH [1]</p> <p style="text-align: center;">Conc H<sub>2</sub>SO<sub>4</sub></p> <p>iii) C<sub>2</sub>H<sub>5</sub>OH -----→ C<sub>2</sub>H<sub>4</sub> + H<sub>2</sub>O [1]</p> <p style="text-align: center;">Ni/Pd</p> <p>iv) C<sub>2</sub>H<sub>4</sub> + H<sub>2</sub> -----→ C<sub>2</sub>H<sub>6</sub> [1.5]</p> <p>Hydrogenation of vegetable oils.</p>	
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35	<p>i) X-Testes [0.5]</p> <p>Location- outside the abdominal cavity as sperm production requires a lower temperature than the body [0.5]</p> <p>Sperms are haploid/motile/has a head and tail (any 2) [0.5+0.5]</p> <p>ii) Vasectomy [0.5]</p> <p>No effect [0.5]</p> <p>Vas deferens only carries sperms thus sperms cannot reach further than the cut.</p> <p>However testes will continue to make sperms and release testosterone into the blood stream [1]</p> <p>iii) Z(urethra) carries sperms and urine in males at different times, while it carries only urine in females [1]</p> <p style="text-align: center;"><b>OR</b></p> <p>i) P- Light source is overhead, auxin is evenly distributed, seedlings grow straight upwards towards light/uniform growth of shoot [1]</p> <p>Q- Light source is unidirectional, auxins move to the shaded side causing elongation of cells on this side, thus seedlings bend towards light/more growth on the shady side [1]</p> <p>ii) Movement of sensitive plant- Nastic movement, non growth, non directional [0.5+0.5]</p>	5
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ii)



[0.5 x 4=2]

(two rays, arrows, image formed between optical centre and the focus)

**Section-E**

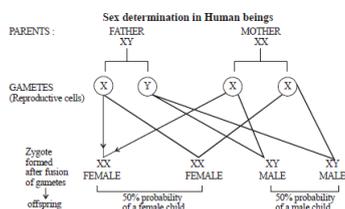
- 37
- i) Ionic compounds have higher boiling points than covalent compounds. [1]
  - ii) Inter particular forces of attraction are strong in ionic compounds [1]
  - iii) Ethanol has higher boiling point than methanol. [0.5]
  - Ethanoic acid has higher boiling point than methanoic acid [0.5]
  - Reason: Higher the molecular mass, higher will be the boiling point. [1]

**OR**

iii) Ethane will have higher boiling point as molecular mass of ethane is higher than that of methane [1+1]

- 38
- i) P- male, the 23<sup>rd</sup> / sex chromosome is a mismatched pair [0.5]
  - Q-female, the 23<sup>rd</sup> / sex chromosome is a perfect pair [0.5]

ii) There are equal chances of having a boy or girl as per the following flow chart



[1]

iii) Probability of children with A blood group is 50 percent

[2]

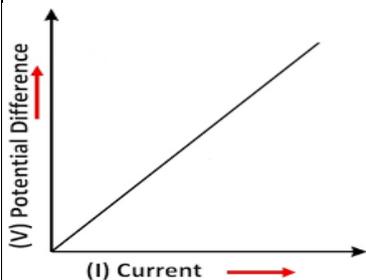
Father  $I^A I^B$  X Mother  $I^O I^O$   
 Gametes  $I^A, I^B$  X  $I^O, I^O$   
 Children  $I^A I^O$  or  $I^B I^O$   
 (or any other suitable explanation)

OR

iii) This information is not enough to determine if A or O is dominant [1]  
The father can have a homozygous (AA) or heterozygous (AO) genotype, while the mother has a homozygous genotype (OO). [1]

39

i)



[1]

ii) If the potential difference across the two ends of a conductor is 1 Volt and the current through it is 1 Ampere, then the resistance of the conductor is 1 ohm [1]

iii)  $R = V/I = 60/4 = 15\Omega$  [1]

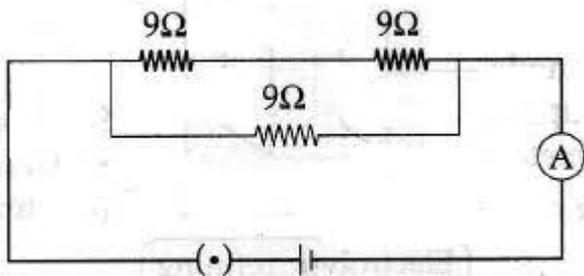
$I = V/R = 120/15 = 8A$  [1]

OR

iii) Connect two 9ohm in series with one 9 ohm in parallel

$R = 9 + 9 = 18\Omega$  [0.5]

$R_{eq} = (18 \times 9) \div (18 + 9) = 6\Omega$  [0.5]



(1)

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