



BAL BHARATI PUBLIC SCHOOL
PRE BOARD EXAMINATION (2023-24)

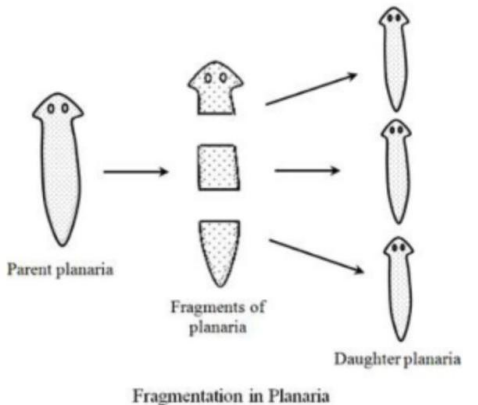
CLASS -X

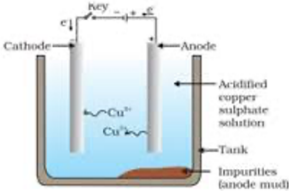
ANSWER KEY

SCIENCE(086)

CODE NO - SCI/10/B

SECTION - A MCQ TYPE QUESTIONS (1X20=20)		
1. 2. 3 4. 5. 6. 7. 8. 9. 10 11. 12. 13 14 15 16 17 18 19 20	c) A salt (b) Mercury (d) C ₂ H ₄ (c) Fe ₃ O ₄ (b) Liquid X is sodium carbonate and the gas Y is CO ₂ (b) A reddish-brown residue is left (d)1:2 (c) only i (a) act as a gateway for the food to pass through stomach. (a) 9:3:3:1 (b) DNA copies generated are always identical to the original. (d) represents pulmonary vein that carries oxygenated blood from lungs to heart (c) concave mirror and concave lens (d) r<v (b) 5J (c) 1,4,2,3 (b) Both A and R are true and R is not the correct explanation of A. (d)A is false but R is true (c) A is true but R is false. (a) A and R are true and reason is the correct explanation of assertion.	1
SECTION - B (2X6=12)		
21.	(a) ZnO / Zinc Oxide. (b) Bubbles are seen in the reaction medium / Test tube becomes warm (any one)	1 1
22.	Regeneration Completion of Diagram	1 1

	 <p style="text-align: center;">Fragmentation in Planaria</p>	
23.	<p>a) Label X RBC Label Y Lymph</p> <p>b) Lymph carries digested and absorbed fat from intestine and drains excess fluid from extra cellular space back into the blood.</p> <p>OR</p> <p>(a) If the tubes joining the parts 1 and 2 are blocked /cut then urine produced in the kidneys will not pass through the ureters in the urinary bladder.</p> <p>(b) The substances which are reabsorbed in the filterate is glucose, amino acids, salts and a major amount of water.</p>	0.5 0.5 1 1 1
24.	<p>a) medium B</p> <p>b) B to C</p> <p>Speed of light is inversely proportional to the optical density of the medium.</p>	1 0.5 0.5
25.	<p>vertically inward</p> <p>Right hand thumb rule</p> <p>Statement</p> <p style="text-align: center;">OR</p> <p>Resistance of each part= R/3</p> <p>Net resistance of the combination =R/9</p> <p>Resistivity -No change as material is same</p>	0.5 0.5 1 0.5 0.5 1
26.	<p>Disposable paper cups are considered a better alternative to plastic cups</p> <p>They are biodegradable ,can be recycled and do not pollute the environment. (any 2 points)</p>	1 1
SECTION - C (7X3=21)		
27.	<p>A is Aluminium/ Al</p> <p>B is Aluminium Oxide / Al₂O₃</p> <p>$Al_2O_3 + 6HCl \rightarrow 2AlCl_3 + 3H_2O$</p> <p>$Al_2O_3 + 2NaOH \rightarrow 2NaAlO_2 + H_2O$</p>	0.5 0.5 1 1
28.	<p>X is Cu</p> <p>Y is CuO</p> <p>Diagram</p>	0.5 0.5 1

	<div style="text-align: center;">  </div> <p>Labeling</p> <p style="text-align: center;">OR</p> <p>A28. (a) Both acids and bases are electrolytes which means that they're good conductors of electricity. Acids and bases both produce ions in water solution. Acids release hydrogen ions (H⁺) whereas Bases release hydroxide ions (OH⁻) Example : Solutions of both HCl and NaOH conduct electricity.</p> <p>(b) X is Plaster of Paris CaSO₄.1/2 H₂O.</p> <div style="text-align: center;"> $\text{CaSO}_4 \cdot 2\text{H}_2\text{O} \xrightarrow{373\text{K}} \text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$ </div>	<p style="text-align: center;">1</p> <p style="text-align: center;">1</p> <p style="text-align: center;">0.5</p> <p style="text-align: center;">0.5</p> <p style="text-align: center;">1</p>
29.	<p>Most human chromosomes have a maternal and a paternal copy, and we have 22 such pairs. But one pair, called the sex chromosomes, is odd in not always being a perfect pair. Women have a perfect pair of sex chromosomes, both called X. But men have a mismatched pair in which one is a normal-sized X while the other is a short one called Y. So women are XX, while men are XY. All children will inherit an X chromosome from their mother regardless of whether they are boys or girls. Thus, the sex of the children will be determined by what they inherit from their father. A child who inherits an X chromosome from her father will be a girl, and one who inherits a Y chromosome from him will be a boy.</p> <p>Flowchart</p>	<p style="text-align: center;">2</p> <p style="text-align: center;">1</p>
30.	<p>a) Stimuli in P is Gravity Stimuli in Q Light P shows - Geotropism Q shows -Phototropism.</p> <p>b) Abscisic acid inhibits growth.</p>	<p style="text-align: center;">0.5</p> <p style="text-align: center;">0.5</p> <p style="text-align: center;">0.5</p> <p style="text-align: center;">0.5</p> <p style="text-align: center;">1</p>
31.	<p>f= +10 cm Real image: Object between f and 2f Image beyond 2f Ray diagram : Real image: Object between 0 and f Image on the same side as object Ray diagram :</p>	<p style="text-align: center;">0.5</p> <p style="text-align: center;">0.5</p> <p style="text-align: center;">0.5</p> <p style="text-align: center;">0.5</p> <p style="text-align: center;">0.5</p> <p style="text-align: center;">0.5</p>
32.	<p>a)The heating element of the heater is made up of an alloy which has very high resistance. So, when current flows through the heating element, it becomes too</p>	<p style="text-align: center;">1</p>

	<p>hot and glows red due to the heating effect of current. But the resistance of cord which is usually of copper or aluminium is very low so it does not glow.</p> <p>b) Any two points</p> <p>i) If one appliance goes off other remain working</p> <p>ii) Every appliance receives the current as per its requirement and tolerance or any other suitable point</p>	<p>1</p> <p>1</p>
33.	<p>(a) $R_1 = \rho L/A = 4$ $R_2 = \rho(L/2)/2A$ $= R_1/4 = 1 \text{ ohm}$</p> <p>(b) $Q = It = 1 \times 16 = 16C$</p>	<p>0.5</p> <p>0.5</p> <p>1</p> <p>1</p>
SECTION -D (3X5=15)		
34.	<p>(a)</p> $\begin{array}{c} \text{H} \cdot \cdot \cdot \text{C} \cdot \cdot \cdot \text{H} \\ \cdot \cdot \cdot \cdot \cdot \\ \text{H} \cdot \cdot \cdot \text{C} \cdot \cdot \cdot \text{C} \cdot \cdot \cdot \text{H} \\ \cdot \cdot \cdot \cdot \cdot \end{array}$ <p>(b).</p> $\text{CH}_3\text{CH}_2\text{OH} \xrightarrow[\text{heat}]{\text{Conc. H}_2\text{SO}_4} \text{CH}_2=\text{CH}_2 + \text{H}_2\text{O}$ <p style="text-align: center;">Ethanol Ethene</p> <p>(1/2 mark for reaction and 1/2 for reaction condition)</p> <p>(c) two isomers of Butane (1/2 mark each)</p> $\begin{array}{c} \text{H} & \text{H} & \text{H} & \text{H} \\ & & & \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{C}-\text{H} \\ & & & \\ \text{H} & \text{H} & \text{H} & \text{H} \end{array} \quad \begin{array}{c} & & \text{H} & & \\ & & & & \\ & & \text{H}-\text{C}-\text{H} & & \\ & & & & \\ \text{H} & -\text{C} & -\text{C} & -\text{C} & -\text{H} \\ & & & & \\ \text{H} & \text{H} & \text{H} & & \end{array}$ <p>(d). No Detergents will form lather in hard water just like in soft water</p> <p>(e) $\text{NaOH} + \text{CH}_3\text{COOH} \rightarrow \text{CH}_3\text{COONa} + \text{H}_2\text{O}.$</p>	<p>1</p> <p>1</p> <p>1</p> <p>0.5</p> <p>0.5</p> <p>1</p>

35.	<p>a) Diagram ,Label refer to NCERT b) Placenta ,Role -Provides large surface area for glucose and oxygen to pass from mother to the embryo ,waste can be removed through placenta (any one) c) Gonorrhoea,Syphilis,AIDS (any two)</p> <p style="text-align: center;">OR</p> <p>i) a) She is suffering from diabetes . b) The doctor suggested a less sugar diet plan because insulin hormone which is produced by the pancreas is not secreted in proper amounts which helps in regulating blood sugar levels.</p> <p>ii) Adrenaline . The target organs or the specific tissues on which it acts include the heart. As a result, the heart beats faster, resulting in supply of more oxygen to our muscles.</p> <p>The blood to the digestive system and skin is reduced due to contraction of muscles around small arteries in these organs. This diverts the blood to our skeletal muscles. The breathing rate also increases because of the contractions of the diaphragm and the rib muscles</p>	2,2 ,1 1 1 1+ 1+ 3
36.	<p>(a) (i) Ciliary muscles help in adjusting the focal length of eye lens (ii) The pupil regulates and controls the amount of light entering the eye</p> <p>(b) Fig 11.3 part c NCERT u= -25 cm , v= 100 cm $1/v - 1/u = 1/f$ $1/(-100) - 1/(-25) = 1/f$ $-1/100 + 1/25 = 1/f$ $3/100 = 1/f$ f= 33.3 cm Or 0.33m P=1/f=1/0.33= 3D</p> <p style="text-align: center;">OR</p> <p>(a) (i) Principal focus: The parallel incident rays are reflected by the mirror to meet (or seem to meet) at a point known as focus of the spherical mirror. (ii) Centre of curvature: The reflecting surface of a spherical mirror forms a part of a sphere. This sphere has a centre. This point is called the centre of curvature of the spherical mirror</p> <p>(b) f= +300cm , u=-100cm $1/v + 1/u = 1/f$ $1/v - 1/100 = 1/300$ $1/v = 1/300 + 1/100 = 4/300$ v= 75 cm Virtual m= -v/u = 75/100= 3/4 (diminished)</p>	1 1 1 0.5 0.5 0.5 0.5 1 1 0.5 0.5 0.5 0.5 1

SECTION - E (3x4=12)																				
37.	(a) Ethanol / C ₂ H ₅ OH (b) CH ₃ COCH ₃ Ketone and CH ₃ CHO Aldehyde. (1/2 each) (c) 14 u (d) As the molecular mass increases in any homologous series, a gradation in physical properties is seen. This is because the melting and boiling points increase with increasing molecular mass. <p style="text-align: center;">OR</p> (d) (d) HCOOH and CH ₃ COOH (½ X2)	1 1 1 1 1																		
38.	a) Phenotypic characters of F1 progeny is Yellow seeds b) Phenotypic ratio of F2 generation is 3:1 Genotypic ratio of F2 generation is 1:2:1 = YY : Yy : yy c) Making of Cross Dominant trait: Yellow colour (YY) Recessive trait: Green colour (yy) Cross: Yellow seeds (YY) x Green seeds (yy) Punnett square: <table border="1" style="width: 100px; margin-left: 20px;"> <tr> <td></td> <td>Y</td> <td>Y</td> </tr> <tr> <td>y</td> <td>Yy</td> <td>Yy</td> </tr> <tr> <td>y</td> <td>Yy</td> <td>Yy</td> </tr> </table> F1 generation: 100% yellow seeds (Yy) F1 Cross: Yellow seeds (Yy) x Yellow seeds (Yy) Punnett square: <table border="1" style="width: 100px; margin-left: 20px;"> <tr> <td></td> <td>Y</td> <td>y</td> </tr> <tr> <td>Y</td> <td>YY</td> <td>Yy</td> </tr> <tr> <td>y</td> <td>Yy</td> <td>yy</td> </tr> </table> F2 generation: Genotypic ratio : 1 : 2 : 1 = YY : Yy : yy <p style="margin-left: 20px;">OR</p> c) In the cross between Yy X yy , 300 yellow and 300 green plants will be produced. Cross		Y	Y	y	Yy	Yy	y	Yy	Yy		Y	y	Y	YY	Yy	y	Yy	yy	1 1 1 1 1
	Y	Y																		
y	Yy	Yy																		
y	Yy	Yy																		
	Y	y																		
Y	YY	Yy																		
y	Yy	yy																		

39.	<p>A) a) Heater A</p> <p>B) a) Two times</p> <p>C) (i)The resistivity of an alloy is generally higher than that of its constituent metals.</p> <p>(ii) Alloys do not oxidise (burn) readily at high temperatures</p> <p style="text-align: center;">OR</p> <p style="text-align: center;">Bulb B</p> <p>It has low resistance so permits high current , hence glows brighter</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>
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