



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

CLASS -X

ANSWER KEY

SCIENCE(086)

CODE NO - SCI/10/A

SECTION - A MCQ TYPE QUESTIONS (1X20=20)		
1.	(d) 1:2	1
2.	(c) A salt	
3.	(c) Fe_3O_4	
4.	(b) Mercury	
5.	(d) C_2H_4	
6.	(b) Liquid X is sodium carbonate and the gas Y is CO_2	
7.	(b) A reddish-brown residue is left	
8.	(d) Test tube B as HCl will activate pepsin for breakdown of protein into simple molecules.	
9.	(c) only i	
10.	(b) DNA copies generated are always identical to the original.	
11.	(a) 9:3:3:1	
12.	(d) represents pulmonary vein that carries oxygenated blood from lungs to heart	
13.	(d) $r < v$	
14.	(c) concave mirror and concave lens	
15.	(c) 1,4,2,3	
16.	(b) 5J	
17.	(b) Both A and R are true and R is not the correct explanation of A.	
18.	(d) A is false but R is true	
19.	(c) A is true but R is false.	
20.	(a) A and R are true and reason is the correct explanation of assertion.	
SECTION - B (2X6=12)		
21.	(a) ZnO / Zinc Oxide.	1
	(b) Bubbles are seen in the reaction medium / Test tube becomes warm (any one)	1
22.	(a) Vegetative Propagation Advantages- 1) Plants raised by vegetative propagation can bear flowers and fruits earlier than those produced from seeds. 2) Such methods also make possible the propagation of plants such as banana, orange, rose and jasmine that have lost the capacity to produce seeds. 3) Another advantage of vegetative propagation is that all plants produced are genetically similar enough to the parent plant to have all its characteristics. (any 2 points)	1 1

23.	a) Label X RBC Label Y Lymph b) Lymph carries digested and absorbed fat from intestine and drains excess fluid from extra cellular space back into the blood. OR (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. (b) The substances which are reabsorbed in the filterate is glucose, amino acids, salts and a major amount of water.	0.5 0.5 1 1 1
24.	a) medium B b) B to C Speed of light is inversely proportional to the optical density of the medium.	1 0.5 0.5
25.	a) (i) Magnetic field strength. (ii) The magnitude of the current flowing through the conductor. (iii) The length of the conductor. b)The force experienced by a current-carrying conductor is largest when the directions of the magnetic field and electric current are perpendicular to each other. Or Net R: $1/R = 1/5 + 1/5 = 2/5$ $R = 5/2$ ohms Resistivity- will remain the same as material is same.	1.5 0.5 0.5 0.5 1
26.	Disposable paper cups are considered a better alternative to plastic cups They are biodegradable ,can be recycled and do not pollute the environment. (any 2 points)	1 1
SECTION - C (7X3=21)		
27.	(a) Metal is Mercury Ore is Cinnabar $2\text{HgS} + 3\text{O}_2 \xrightarrow{\quad\quad\quad} 2\text{HgO} + 2\text{SO}_2$ $2\text{HgO} \xrightarrow{\quad\quad\quad} 2\text{Hg} + \text{O}_2$	0.5 0.5 1 1
28.	X is Cu Y is CuO Diagram	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>	1 1 0.5 0.5 1
29.	<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>	0.5 0.5 0.5 0.5 1
30.	<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>	2 1
31.	<p>f= +10 cm Real image: Object between f and 2f Image beyond 2f Ray diagram :</p> <p>Real image: Object between 0 and f Image on the same side as object Ray diagram :</p>	0.5 0.5 0.5 0.5 0.5 0.5

	<p>i) a) She is suffering from diabetes .</p> <p>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 .</p> <p>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>	<p>1</p> <p>1</p> <p>3</p>
36.	<p>(a) (i) Ciliary muscles help in adjusting the focal length of eye lens</p> <p>(ii) The pupil regulates and controls the amount of light entering the eye</p> <p>(b) Fig 11.3 part c NCERT</p> <p>$u = -25 \text{ cm}$, $v = 100 \text{ cm}$</p> <p>$1/v - 1/u = 1/f$</p> <p>$1/(-100) - 1/(-25) = 1/f$</p> <p>$-1/100 + 1/25 = 1/f$</p> <p>$3/100 = 1/f$</p> <p>$f = 33.3 \text{ cm}$ Or 0.33m</p> <p>$P = 1/f = 1/0.33 = 3D$</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.</p> <p>(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) $f = +300\text{cm}$, $u = -100\text{cm}$</p> <p>$1/v + 1/u = 1/f$</p> <p>$1/v - 1/100 = 1/300$</p> <p>$1/v = 1/300 + 1/100 = 4/300$</p> <p>$v = 75 \text{ cm}$</p> <p>Virtual</p> <p>$m = -v/u = 75/100 = 3/4$ (diminished)</p>	<p>1</p> <p>1</p> <p>1</p> <p>0.5</p> <p>0.5</p> <p>0.5</p> <p>0.5</p> <p>0.5</p> <p>1</p> <p>1</p> <p>0.5</p> <p>0.5</p> <p>1</p>
SECTION - E (3x4=12)		
37.	<p>(a) Ethanol / $\text{C}_2\text{H}_5\text{OH}$</p> <p>(b) CH_3COCH_3 Ketone and CH_3CHO Aldehyde. (1/2 each)</p> <p>(c) 14 u</p> <p>(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> <p style="text-align: center;">OR</p> <p>(d) (d) HCOOH and CH_3COOH (1/2 X2)</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>

38.	<p>a) Phenotypic characters of F1 progeny is Yellow seeds</p> <p>b) Phenotypic ratio of F2 generation is 3:1 Genotypic ratio of F2 generation is 1:2:1 = YY : Yy : yy</p> <p>c) Making of Cross Dominant trait: Yellow colour (YY) Recessive trait: Green colour (yy) Cross: Yellow seeds (YY) x Green seeds (yy)</p> <p>Punnett square:</p> <table border="1" data-bbox="193 409 576 622"> <tbody> <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> </tbody> </table> <p>F1 generation: 100% yellow seeds (Yy) F1 Cross: Yellow seeds (Yy) x Yellow seeds (Yy)</p> <p>Punnett square:</p> <table border="1" data-bbox="193 898 576 1111"> <tbody> <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> </tbody> </table> <p>F2 generation: Genotypic ratio : 1 : 2 : 1 = YY : Yy : yy</p> <p>OR</p> <p>c) In the cross between Yy X yy , 300 yellow and 300 green plants will be produced. Cross</p>		Y	Y	y	Yy	Yy	y	Yy	Yy		Y	y	Y	YY	Yy	y	Yy	yy	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. (ii) Alloys do not oxidise (burn) readily at high temperatures</p> <p>OR</p> <p>Bulb B It has low resistance so permits high current , hence glows brighter</p>	1 1 1 1 1 1																		