



COMMON PRE-BOARD EXAMINATION 2023-24

Subject: SCIENCE (086)

Class X

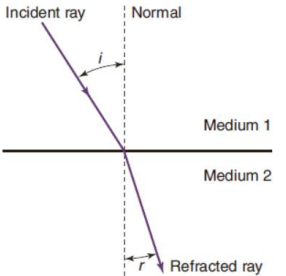


MARKING SCHEME

Qn No.	Answer	Marks				
SECTION - A						
1	(c) (i), (ii) and (iv)	1				
2	(b) aqueous solution of sodium chloride	1				
3	(c) a brown gas is evolved, and a yellow residue is left behind.	1				
4	(d) Basic Copper carbonate	1				
5	(d) IV	1				
6	(a) Blue	1				
7	(b) It is a good conductor of electricity in its pure solid state.	1				
8	(a) towards the lungs	1				
9	(d) 5000 kJ	1				
10	<table border="1"><thead><tr><th>Part Name</th><th>Function</th></tr></thead><tbody><tr><td>(a) A is Cotyledon</td><td>It is the future plant</td></tr></tbody></table>	Part Name	Function	(a) A is Cotyledon	It is the future plant	1
	Part Name	Function				
(a) A is Cotyledon	It is the future plant					
11	(b) Tt and tt	1				
12	(a) Tubule	1				
13	(b) directly below the wire	1				
14	(c) $R_3 > R_2 > R_1$	1				
15	(c) Capillaries	1				
16	(d) The population of lions decreases and grass increases.	1				
17	(d) A is false but R is true.	1				
18	(a) Both A and R are true and R is the correct explanation of A	1				
19	(d) A is false but R is true	1				
20	(b) Both A and R are true and R is not the correct explanation of A	1				

SECTION – B

Q. no. 21 to 26 are very short answer questions.

21	i) X is hydrogen gas ½ mark ii) $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$ ½ mark iii) Exothermic reaction ½ mark iv) Displacement reaction ½ mark	2
22	a) Leishmania reproduces by binary fission and Plasmodium reproduce by multiple fission. (1mark) b) In binary fission, two individuals are formed from a single parent, whereas in multiple fission the parent body divides into many daughter organisms. (½ mark each)	2
23	Strategies used by plants for excretion are : i)They can get rid of excess water and oxygen through stomata. ii) Many plant waste products are stored in cellular vacuoles. iii) Waste products may be stored in leaves that fall off. iv) Waste products are stored as resin and gums especially in old xylem. (½ mark each) <p align="center">OR</p> The amount of urine depends on the water intake by the body. The amount of water reabsorbed depends on how much excess water there is in the body, and on how much of dissolved waste there is to be excreted. (1+1 mark)	2
24	Explanation [Due to atmospheric refraction – ½ mark, Apparent position of star- ½ mark, atmospheric layers of varying refractive index- ½ mark, due to varying climatic conditions – ½ mark]	2
25	a)  ----- ½ mark Bending of light when enters from rarer to denser medium is refraction. Or (Rarer to denser bends towards normal or vice versa) ----- ½ mark b) $n = c/v$ ----- ½ mark $v = c/n = 3 \times 10^8 / (4/3)$ ----- ½ mark $= 9 \times 10^8 / 4 = 2.25 \times 10^8$ ----- Answer - ½ mark, unit – ½ mark <p align="center">OR</p> a) Definition ----- ½ mark b) $P = 1/f$ ----- ½ mark $= 1/0.25 = 4D$ ----- Answer - ½ mark, unit – ½ mark	2
26	(a) A food chain which is most advantageous for human beings in terms of energy is:	2

	<p>Cereal plant → Human being (1 mark)</p> <p>(b) If the cereal plant is growing in soil rich in pesticides, these pesticides are absorbed by growing plants along with water and minerals, when animals eat these cereal plants, these poisonous chemical pesticides go into their bodies through food (½ mark). This increase in concentration of harmful pesticides in the body of living organisms at each trophic level of a food chain is called biological magnification. (½ mark)</p>	
<p>SECTION - C</p> <p>Q.no. 27 to 33 are short answer questions.</p>		
27	<p>(i) Hydrogen gas is not evolved when most metals react with nitric acid because HNO₃ is a strong oxidising agent. It oxidises the H₂ produced to water and itself gets reduced to any of the nitrogen oxides (N₂O, NO, NO₂).</p> <p>(ii) ZnO reacts both with acids as well as bases to form salt and water. Thus, ZnO is an amphoteric oxide.</p> <p>(iii) Ionic compounds have high melting and boiling points because a considerable amount of energy is required to break the strong inter-ionic attraction.</p>	3
28	<p>The evolved gas is carbon dioxide which when passes through lime water turns it milky. ½ mark</p> <p>$\text{Ca(OH)}_2 + \text{CO}_2 \rightarrow \text{CaCO}_3 + \text{H}_2\text{O}$ 1 mark</p> <p>When excess CO₂ is passed the milkiness disappears and clears the solution. ½ mark</p> <p>$\text{CaCO}_3 + \text{H}_2\text{O} + \text{CO}_2 \rightarrow \text{Ca(HCO}_3)_2$ 1 mark</p> <p style="text-align: center;">OR</p> <p>i) X is baking soda. ½ mark The pH value of the solution of X is higher than 7. ½ mark</p> <p>(ii) $2\text{NaHCO}_3 \rightarrow \text{Na}_2\text{CO}_3 + \text{CO}_2 + \text{H}_2\text{O}$ 1 mark</p> <p>(iii) Being alkaline, it neutralizes excess acid in the stomach and provides relief. 1 mark</p>	3
29	<p>(a) (i) Colour of stem in F₁ progeny:</p> <div style="text-align: center;"> <p>Green stemmed rose plant × Brown stemmed rose plant</p> <p>Parents GG × gg</p> <p>Gametes G ↓ g ↓</p> <p>F₁ progeny Gg</p> <p>Green stemmed rose plant</p> </div> <p style="text-align: right;">(1mark)</p> <p>(ii) F₁ progeny on self pollination:</p>	3

$$Gg \times Gg$$

$$\downarrow$$

	G	g
G	GG	Gg
g	Gg	gg

F₂ generation Green stemmed : Brown stemmed

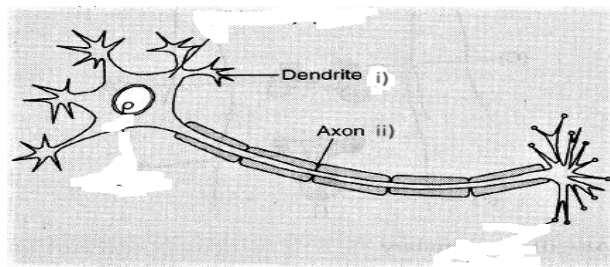
25% of F₂ progeny are brown stemmed rose plant. (½ mark)

(iii) Ratio of GG and Gg in F₂ progeny:

Genotype of F₂ progeny – GG : Gg - 1 : 2 (½ mark)

(b) This is a monohybrid cross. This shows that out of two contrasting traits only one dominant trait appears in F₁ generation and the trait which does not express is recessive. (½ mark each)

30 (a)



(Diagram, labelling - 1½ mark)

(b) (i) Cerebrum (½ mark) ii) Cerebellum (½ mark)

(c) The plant hormone Cytokinin promotes cell division. (½ mark)

3

31

i) $R_{s1} = 10 + 20 = 30\Omega$ ----- ½ mark
 $R_p = 30 \times 30 / (30 + 30) = 900/60 = 15\Omega$ ----- ½ mark
 $R_{s2} = 12 + 15 = 27\Omega$ ----- ½ mark
 Any one equation ----- ½ mark

ii) $I = V / R = 6/27 = 0.22 \text{ A}$ ----- 1 mark

3

32

a) Myopia ----- ½ mark
 b) 2 causes----- ½ + ½ mark
 c) ray diagram ----- 1 ½ mark (use of concave lens- ½ mark)

OR

a) Hypermetropia ----- ½ mark
 b) ray diagram ----- 1 ½ mark (image formation – behind the retina - ½ mark)
 two causes ----- ½ + ½ mark

3

33

a) A- North Pole ----- ½ mark
 Direction of current at end A is anticlockwise direction----- ½ mark

3

b) Diagram of magnetic field lines around a solenoid ----- 1½ mark

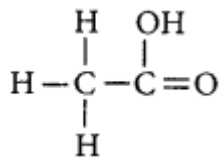
c) Any one method ----- ½ mark

SECTION - D

Q.no. 34 to 36 are long answer questions.

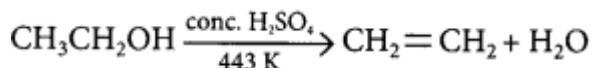
34 (i) D ½ mark

(ii) B ½ mark



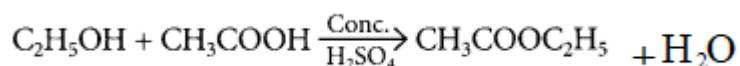
½ mark

(iii) C ½ mark



1 mark

(iv)



1 mark

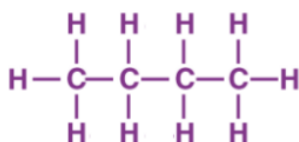
Ethyl ethanoate or ester ½ mark

It is used in making perfumes, as flavouring agents (Any one use) ½ mark

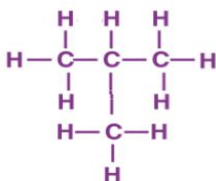
OR

(a) Isomers are compounds which have the same molecular formula but different structural formulae. 1 mark

The structures of possible isomers of butane are:



Butane
 C_4H_{10}

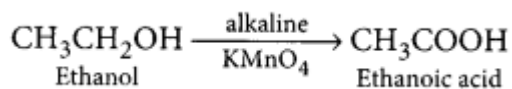


Iso-Butane
 C_4H_{10}

(½ + ½ mark)

(b) The compound 'X' is unsaturated hydrocarbon. Because unsaturated hydrocarbons burn with a sooty flame 1 mark

(c) Alkaline KMnO_4 act as an oxidizing agent 1 mark



1 mark

35 (a) (i) Ovary – Involved in production of ova and female sex hormone estrogen.

(1mark)

(ii) Oviduct – Receives ovum after ovulation and is the site of fertilisation. (1mark)

(b) (i) One egg is released each month by one of the ovaries, which travels from fallopian tube into the uterus. ($\frac{1}{2}$ mark) Each month, the uterus prepares itself for receiving and implanting zygote. It increases blood supply and thickens the wall. ($\frac{1}{2}$ mark)

(ii) If fertilisation fails to take place the thick and spongy lining of uterus which is formed to receive the fertilised ovum breaks and comes out through the vagina as blood and mucus. This cycle takes place every month and is known as menstrual cycle. (1 mark)

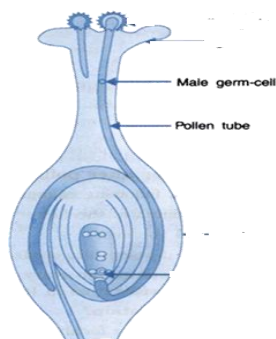
(c) Functions:

(i) It provides large surface area for glucose and O_2 to pass from mother's blood to the embryo.

(ii) It also removes embryonal metabolic wastes. ($\frac{1}{2}$ mark each)

OR

a)



($1\frac{1}{2}$ mark)

b) When the pollen grain reaches the stigma of a flower by pollination, it starts giving rise to a pollen tube that passes through the style and reaches the ovary of the pistil. (1 mark). When the pollen tube reaches an ovule, it releases the male gametes. (1 mark) Male cells are released into the ovule for the fertilization with the female egg cell and thus the zygote is formed. ($\frac{1}{2}$ mark)

c) (i) ovary changes into fruit (ii) ovule changes into seed ($\frac{1}{2}$ mark each)

36 Values with proper sign conventions ----- $\frac{1}{2}$ mark

Lens formula ----- $\frac{1}{2}$ mark, Calculation ----- $\frac{1}{2}$ mark

Answer: $u = -100$ cm ----- $\frac{1}{2}$ mark

$h' = (v/u) \times h$ ----- $\frac{1}{2}$ mark, substitution ----- $\frac{1}{2}$ mark

Ans: 2cm ---- $\frac{1}{2}$ mark

ray diagram of a concave lens when object is placed between infinity and $2F_1$ (as the object distance is more than 50 cm- reduce $\frac{1}{2}$ mark for incorrect object position) ---- $1\frac{1}{2}$ marks

OR

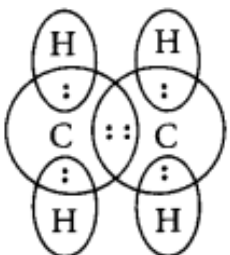
Values with proper sign conventions ----- $\frac{1}{2}$ mark

5

	Mirror formula ----- ½ mark Calculation of v ----- ½ mark $v = -60 \text{ cm}$ ----- ½ mark $m = -v/u$ ----- ½ mark, Substitution----- ½ mark Answer: $m = -3$ ----- ½ mark ray diagram of a concave mirror when object is placed between F and C ----- 1 ½ mark	
--	--	--

SECTION - E

Q.no. 37 to 39 are case -based/data -based questions with 2 to 3 short sub - parts. Internal choice is provided in one of these sub-parts.

37	<p>(a) A - Ethene B - Ethane (½ +½ mark)</p> <p>(b)</p>  <p style="text-align: right;">1 mark</p> <p>(c)</p> $\underset{\text{Ethene}}{\text{CH}_2 = \text{CH}_2} + \text{H}_2 \xrightarrow[\text{Catalyst}]{\text{Ni}} \underset{\text{Ethane}}{\text{CH}_3 - \text{CH}_3}$ <p style="text-align: right;">1 mark</p> <p>Presence of catalyst such as Ni/Pd. 1 mark</p> <p style="text-align: center;">OR</p> <p>(c) Substitution reaction 1 mark</p> $\text{C}_2\text{H}_6 + \text{Cl}_2 \xrightarrow{\text{sunlight}} \text{C}_2\text{H}_5\text{Cl} + \text{HCl} \quad 1 \text{ mark}$	4
----	--	---

38	<p>a) 200 W----- 1 mark</p> <p>b) $R_A > R_B$ so R_B will glow brighter----- ½ mark $P \propto 1/R$ ----- ½ mark</p> <p>c) i) $I = V/R$ ----- ½ mark $= 220 / 55 = 4 \Omega$ [substitution --- ½ mark, answer ---- ½ mark]</p> <p>ii) Electric power ----- ½ mark</p> <p style="text-align: center;">OR</p> <p>c) i) No change ----- ½ mark</p>	4
----	--	---

	ii) $A_2 = 0A$ ----- ½ mark A1 and A3 remains same ----- ½ mark As same p.d. is available for both bulbs B_1 and B_3 ----- ½ mark	
39	i. (c) 1 and 3 only (1mark) ii. $Rr \times rr$ (1mark) iii. $RR \times rr$ (1mark) iv. 750, 250 (1mark) <p style="text-align: center;">OR</p> iv. Dominant characters	4