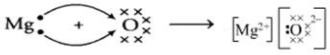
INDIAN SCHOOL AL WADI AL KABIR

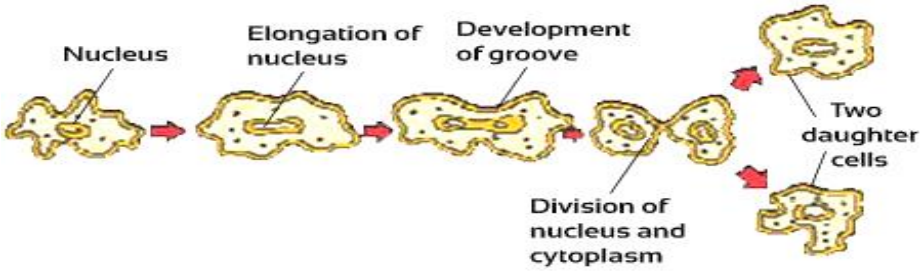
Class X Rehearsal Examination -(2022-23)

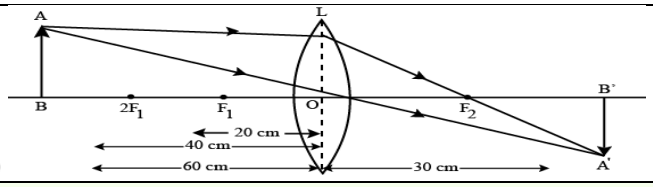
SUB- Science

CLASS X-QUESTION PAPER-SET -2-A

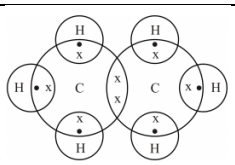
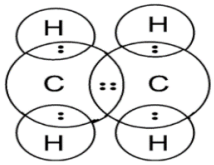
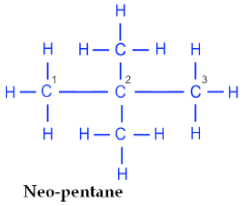
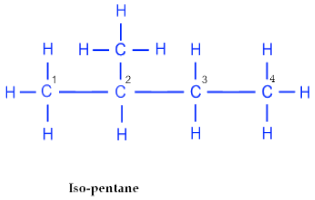
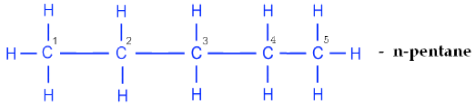
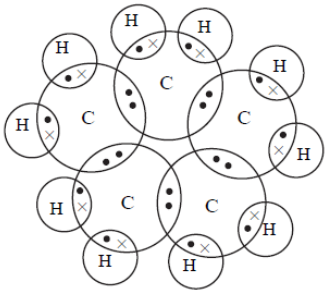
MARKING SCHEME (2022-23)

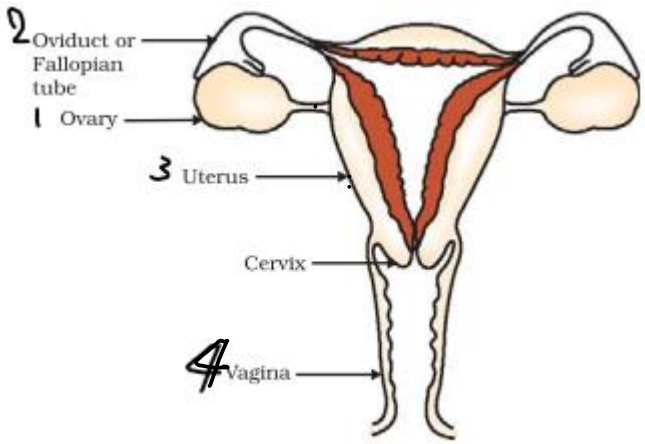
SECTION – A			
1	(d)II and IV	1	1
2	(b)X is oxygen and Y is hydrogen	1	1
3	(c)Nitrogen dioxide	1	1
4	(d)An antacid	1	1
5	(d) turns green and a reddish-brown substance is deposited on the iron nail.	1	1
6	(a)I and II	1	1
7	(d)are formed by the sharing of electrons.	1	1
8	(b) transportation of food	1	1
9	(b) Nephron, filtration of waste	1	1
10	(c) Planaria, Regeneration	1	1
11	(a) 50%	1	1
12	(d) Frog: Lizard	1	1
13	(b) $R_1 > R_2 > R_3$	1	1
14	c	1	1
15	c) 2 x 10^8 m/s	1	1
16	c) 2A	1	1
17	(b)Both A and R are true , but R is not the correct explanation of the assertion	1	1
18	(a) Both A and R are true and R is the correct explanation of A	1	1
19	(d) A is False but R is true	1	1
20	(d) A is False but R is true	1	1
SECTION – B			
21	$Mg_{[2,8,2]} \longrightarrow Mg^{2+}_{[2,8]} + 2e^-$ $O_{[2,6]} + 2e^- \longrightarrow O^{2-}_{[2,8]}$  a (b) It is due to the strong force of attraction between oppositely charged ions. OR Cinnabar is HgS $2HgS(s) + 3O_2(g) \xrightarrow{Heat} 2HgO(s) + 2SO_2(g)$ $2HgO(s) \xrightarrow{Heat} 2Hg(l) + O_2(g)$	1 1 1 1	2
22	Man 100 J, sheep 100 x 10 = 1000 J, plants 1000 x 10 = 10,000 J.	2	2
23	The process mode of intake of food is called nutrition. (any relevant definition)	1 ½	2

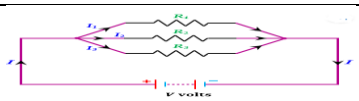
	Autotrophic nutrition Heterotrophic nutrition	½	
24	 Binary Fission in Amoeba	½ mark forcorrect diagram, ½ for each of any three labels (½ X 3= 1 ½ + ½ = 2 marks)	2
25	When 1 joule of work is done in carrying 1 coulomb of charge, from infinity to a point in the electric field, then potential at that point is called 1 volt. Potential difference between two points is $V = \frac{W}{Q}$ $W = Q \times V$ $= 1 \times 3 = 3\ J$ OR An ammeter is a device used for the measurement of electric current. I=Q/t =150/60=2.5	1+1 (1+1)	2
26	During sexual reproduction, an egg cell fuses with sperm cell, each of which has half the number of chromosomes to form zygote. The zygote formed has the 23 pairs of chromosomes. 23 chromosomes from mother and 23 chromosomes from the father. In this way, an equal genetic contribution of male and female parents is ensured in the progeny.		2
	SECTION - C Q.no. 27 to 33 are short answer questions.		
27	The reaction in which oxidation and reduction takes place simultaneously. Magnesium is oxidised as it gains oxygen	1 1+1	3
28	(a) Chlorine gas (b) Hydrochloric acid undergo complete ionisation to give more hydrogen ions and acetic acid undergo partial ionization to give less number of hydrogen ions. (c)Sodim carbonate/ washing soda	1 ½ + ½ 1	3
29	**RR X rr parents** **R r gametes** **Rr F1 generation** **Selfing between F1's Rr X Rr** **RR Rr Rr rr F2 generation**	½ mark for correct naming of parents, 1 mark for working, ½ mark for	3

	(i) Visible characters are all Round seeds the genotype is heterozygous Round (Rr) **(ii) The ratio of Round and wrinkled flowers is 3:1** **Where 3 are Round and 1 is wrinkled.**	correct F2 generation ½ mark for answering each question.(½ + 1 + ½ + ½ + ½ = 3marks)	
30	a) From the observation 3, the radius of curvature of the lens is 40 cm as distance of object and the distance of the image is same. focal length, f=R/2=40/2=20 cm	1	3
	b) S. No. 6 is not correct, because for this observation the object distance is between focus and pole and for such cases, the image formed is always virtual. But in this case real image is formed as the image distance is positive.	1	
	c) 	1	
31	a) Headlights of a car -Concave mirror When the light is placed on the focus of the mirror, it produces a strong beam of light which helps us to see the vehicles and the road ahead clearly b) Side/rear-view mirror of a car -Convex mirror As we need the image erected, upright straight, and diminished, so that there is a wider view of the road behind; we use a convex mirror c) Solar furnace -Concave mirror Rays come from infinity and form an object at the focus of the mirror. Then the parallel rays produce heat and the solar furnace gets heated up.	1 1 1	3

32	Series combination of 1 Ω and 3 Ω resistance is in parallel combination with 6 Ω. Their equivalent resistance is $\frac{1}{R_P} = \frac{1}{6} + \frac{1}{3+1} = \frac{1}{6} + \frac{1}{4} = \frac{2+3}{12}$ $\therefore \quad R_P = \frac{12}{5} = 2.4\ \Omega$ Now, 3.6 Ω, 2.4 Ω and 3 Ω are in series, their equivalent resistance be $R_S = R_1 + R_2 + R_3$ $= 3.6 + 2.4 + 3 = 9\ \Omega$ Hence, the current flowing through the circuit is $I = \frac{V}{R} = \frac{4.5}{9} = \frac{45}{90} = \frac{1}{2} = 0.5$ A. OR (a) From relation, (Ohm's law), R=V/I I=V/R Putting values, we get, I1=V/R1=12/5=2.4 A I2=V/R2=12/10=1.2 A I3=V/R3=12/30=0.4 A (b) Total current, I=I1+I2+I3 I=2.4+1.2+0.4=4 A (c) From relation 1/Rp=1/R1+1/R2+1/R3 Rp=3Ω	1 1 1 1 1 1	3
33	If all the carnivores are removed from the earth, the population of herbivores will increase. Large population of herbivores will overgraze. As a result, all plants will disappear from the earth surface and ultimately the earth may become a desert. The biosphere will get disturbed which in turn will lead to an end of life on earth. (Any relevant logical explanation) OR If all the grazers are removed from the grassland, grass will grow unchecked. It may help the growth of plants which are harmful to the animals. The animals which used to feed on the grazers will die out of starvation. The biogeochemical cycle will be disturbed and as a result the biosphere will get disturbed which in turn will lead to an end of life on earth. . (Any relevant logical explanation)		3
SECTION - D			

34	(a) Ethane C_2H_6  (i) Ethene, C_2H_4  (b) Isomers are organic compounds having same molecular formula but different structures.  Neo-pentane  Iso-pentane  - n-pentane OR (a) (i) Alcohol (ii) Carboxylic acid (b) Any two characteristics Ethene, C_2H_4 (c) Cyclopentane- C_5H_{10} 	½+ 1 ½ + 1 ½ ½ + ½ + ½ ½ + ½ ½ + ½ ½ + ½ 1 1	5
35	(a)  (b) During fertilisation the following events take place:	1 mark for correct diagram ½ mark for each correct label,	5

	(i) One of the male gametes fuses with the female gamete or egg present in the embryo sac. (ii) The other male gametes fuses with the two polar nuclei in the embryo sac. The first fusion gives rise to the zygote while the second fusion gives rise to the endosperm. The process of two fusions occurring in the embryo sac is called double fertisation. OR (a) .  **Figure 8.11** *Human–female reproductive system* (b) If the egg is not fertilised, it lives for about one day. Since the ovary releases one egg every month, the uterus also prepares itself every month to receive a fertilised egg. Thus, its lining becomes thick and spongy. This would be required for nourishing the embryo if fertilisation had taken place. Now, however, this lining is not needed any longer. So, the lining slowly breaks and comes out through the vagina as blood and mucous. This cycle takes place roughly every month and is known as menstruation. It usually lasts for about two to eight days.	2 marks for the relevant explanation. (3 + 2 = 5 marks) 1 mark for correct diagram, ½ mark for each correct label, 2 marks (3 + 2 = 5 marks)	
36	a) Ohm's Law states that the current flowing through a conductor is directly proportional to the potential difference applied across its ends, provided the temperature and other physical conditions remain unchanged. $V \alpha I$, $V=IR$ b)	1 1	5

	 Suppose the total current flowing in the circuit is I, then the current passing through resistance R_1 will be I_1, the current passing through resistance R_2 will be I_2 and the current passing through resistance R_3 will be I_3 Thus, the total current I is given as- $I = I_1 + I_2 + I_3$ ----------(i) Since the potential difference across all the resistors is the same, so applying Ohm's law to each resistor we get- $I_1 = \frac{V}{R_1}$ $I_2 = \frac{V}{R_2}$ $I_3 = \frac{V}{R_3}$ Let equivalent resistance of this parallel combination is R_eq. Therefore, by applying Ohm's law to the whole circuit, we get- $I = \frac{V}{R_{eq}}$ Putting the value of the current I, I_1, I_2, *and* I_3 in equation (i), we get- $\frac{V}{R_{eq}} = \frac{V}{R_1} + \frac{V}{R_2} + \frac{V}{R_3}$ $\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ $(V = 1, \because$ *it is same in the whole ciruit*$)$ Thus, it is proved that, the reciprocal of the equivalent resistance of a group of resistances joined in parallel is equal to the sum of the reciprocals of the individual resistances. $R_1 = R_2 = 12\ \Omega \qquad V = 6\ \text{V}$ $\frac{1}{R_P} = \frac{1}{R_1} + \frac{1}{R_2} = \frac{1}{12} + \frac{1}{12}$ $\therefore R_P = 6\ \Omega$ $I = \frac{V}{R_P} = \frac{6\ \text{V}}{6\ \Omega} = 1\text{A}$	1 1	
	SECTION - E		
37	(i) (b) electrolytic reduction	1	4
	(ii) It is easier to reduce metal oxides to metals compared to metal sulphides and metal carbonates.	1	

	(iii) ROASTING It is the process of conversion of sulphide ore to oxide ore by heating strongly in excess amount of air. Eg:- $2ZnS_{(S)}$ + $3O_{2(g)}$ $\xrightarrow{Roasting}$ $2ZnO$ + $2SO_{2(g)}$ zinc sunphide + oxygen → Zinc Oxide + Sulphur dioxide CALCINATION It is the process of conversion of carbonate ore to oxide ore by heating strongly in limited air. Eg:- $ZnCO_3 \xrightarrow{\Delta} ZnO + CO_2 \uparrow$ OR $2Cu_2S + 3O_2(g) \xrightarrow{Heat} 2Cu_2O(s) + 2SO_2(g)$ $2Cu_2O + Cu_2S \xrightarrow{Heat} 6Cu(s) + SO_2(g)$	2 2	
38	i) Relevant definition ii) Pressure from our friends for participating in many activities, whether we really want to or not. iii) It helps in educating every youth about sexual and reproductive health. iv) It creates awareness among adolescents about safe sexual practices. v) It helps in preventing sexually transmitted infections, including HIV/AIDS. **(Any two)** OR i) a) Being faithful to one's life partner. b) Avoid sexual contact with unknown person. c) Using condom during sexual act helps to prevent transmission of many of these infections to some extent. **(Any two)**.	1 1 1 mark (½ + ½)	4

39	i) Refraction of light caused by the earth's atmosphere due to change in the refractive indices of different layers ii) Black iii) Twinkling of stars , Advance sunrise and delayed sunset OR 1. Light refraction by several layers of the atmosphere with differing refractive indices causes the twinkling of stars. 2. When light from afar strikes the earth's atmosphere, it refracts into each layer that it reaches. The twinkling of stars is due to this. 3. Planets are significantly closer to the earth than stars and are considered extended sources. As a result, a planet can be thought of as a collection of numerous small light sources. 4. Although light coming from individual point-sized sources flickers but the total amount of light entering our eye from all the individual point-sized sources average out to be constant. 5. So there is no twinkling of planets.	1 1 2	4