COIMBATORE SAHODAYA SCHOOLS COMPLEX

CBESSC Pre Board Examination 2024-2025

SCIENCE (086)

SET B - Scoring KEY

Class: X Time: 3 Hrs

Name: _____ Max. Marks: 100

General Instructions:

Read the following instructions carefully and strictly follow them:

(i) This question paper consists of 39 questions. All questions are compulsory.

(ii) Question paper is divided into FIVE sections viz. Section A, B, C, D and E.

(iii) In Section A question number 1 to 20 are Multiple Choice Questions (MCQs) carrying 1 mark each.

(iv) In Section B question number 21 to 26 are Very Short Answer (VSA) type questions carrying 2 marks each. Answer to these questions should be in the range of 30 to 50 words.

(v) In Section C question number 27 to 33 are Short Answer (SA) type questions carrying 3 marks each. Answer to these questions should be in the range of 50 to 80 words.

(vi) In Section D question number 34 to 36 are Long Answer (LA) type - questions carrying 5 marks each. Answer to these questions should be in the range of 80 to 120 words.

(vii) In Section E question number 37 to 39 are of 3 source-based/case-based units of assessment carrying 4 marks each with sub-parts.

(viii) There is no overall choice. However, an internal choice has been provided in some Sections

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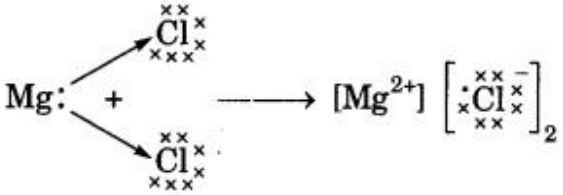
Section – A

Select and write the most appropriate option out of the four options given for each of the questions 1 – 20. There is no negative mark for incorrect response.

Q.NO		MARKS
1.	A. (i) and (ii)	1
2.	C. Applying coating of zinc.	1
3.	C. Only iii	1
4.	D. (ii) and (iv)	1
5.	A. thermal decomposition of lead nitrate which produces brown fumes of nitrogen dioxide.	1
6.	C. 14	1
7.	B. Colourless	1
8.	A. Nostrils → pharynx → larynx → trachea → bronchi → bronchioles → alveoli	1
9.	D. vena cava- takes deoxygenated blood from body parts to right auricle.	1
10.	D. activates the enzyme trypsin.	1
11.	D. Cerebellum.	1
12.	A. I^A I^A and I^B I^O.	1
13.	B. Sign- Positive, Value - More than 1	1
14.	C. I and II	1
15.	B. 1%.	1
16.	C. skin cancer.	1
17.	C. A is true but R is false	1
18.	A. Both A and R are true R is the correct explanation of A.	1
19.	C. A is true, but R is false.	1
20.	A. Both A and R are true R is the correct explanation of A.	1

	Section – B **Question No. 21 to 26 are very short answer questions.**	
21.	Yellow colour precipitate, (0.5) double displacement reaction or precipitation reaction (0.5) $Pb(NO_3)_2 + KI \rightarrow PbI_2 + KNO_3$ (1)	2
22.	(a) 5 - ureter, 6 - Urinary bladder (0.5 + 0.5) (b) Renal artery - brings blood from the heart to the kidney. Urethra - expels the urine from the body. (0.5 + 0.5)	2
23.	Desert plants take up carbon dioxide at night and prepare an intermediate which is acted upon by the energy absorbed by the chlorophyll during the day. (2) **OR** Liver secretes a digestive juice called bile juice. (1) Bile juice helps in emulsification of fats. (1)	2
24.	Given, $n_g = 3/2$, $n_w = 4/3$, $Vg = 2 \times 10^8$m/s (i) $n_g = C / v_g$ $c = n_g \times v_g$ (0.5) $c = 3/2 \times 2 \times 10^8$ m/s $c = 3 \times 10^8$ m/s (0.5) (ii) $n_{gw} = n_g / n_w = v_w / v_g$ (0.5) $= 3/2 \times 3/4 = v_w / 2 \times 10^8$ m/s $v_w = 2.25 \times 10^8$ m/s (0.5)	2
25.	$R_1 = 10\ \Omega$, $R_2 = 10\ \Omega$, $R_3 = 10\ \Omega$, $R_4 = 20\ \Omega$, $R_5 = 20\ \Omega$ R_2 and R_3 are in series ——$Rs = 20\ \Omega$ (0.5) Rs and R_4 are in parallel —— $1/Rp = 1/Rs + 1/R_4$ (0.5) $Rp = 10\ \Omega$ (0.5) $R1 + Rp + R_5 = 10\ \Omega + 10\ \Omega + 20\ \Omega = 40\ \Omega$ (0.5) **OR** (a) Resistance of a conductor depends on (i) it's length (ii) it's cross sectional area (iii) nature of the material (iv) temperature—— (any 3 factors) (3x0.5) (b) SI unit of resistivity —- ohm. metre (Ωm) (0.5)	2
26.	They do not decompose and cause soil, air and water pollution. (1) They get accumulate in the environment and cause biomagnification. (1)	2
	Section – C **Question No. 27 to 33 are short answer questions.**	
27.	(i) Formation of magnesium chloride, (1) ions - Mg^{2+}, Cl^- (1)  (ii) Ionic compounds are solid because of strong force of attraction between the ions. (1)	3

28. (a) (i) A - $NaHCO_3$/ baking soda/ sodium hydrogen carbonate (0.5)
B - Na_2CO_3/sodium carbonate (0.5)
C - CO_2/ carbon dioxide (0.5)
(ii) $2NaHCO_3$ ¾ ⅝® $Na_2CO_3 + H_2O + CO_2$ (1)
(iii) Sodium chloride (0.5)

OR

(b) (i) Magnesium ribbon
$Mg + 2HCl \rightarrow MgCl_2 + H_2$ (1)
(ii) Sodium hydroxide
$NaOH + HCl \rightarrow NaCl + H_2O$ (1)
(iii) Crushed egg shells
$CaCO_3 + HCl \rightarrow CaCl_2 + CO_2 + H_2O$ (1)

3

29.

S.No.	Feature	Arteries	Veins
1	Structure - Walls and valves	Have thick walls without valves.	Thin walls with valves.
2	Function	Carries oxygenated blood except pulmonary artery.	Carries deoxygenated blood except pulmonary vein.
3	Blood flow direction	Carries blood away from heart.	Carries blood towards the heart.

3

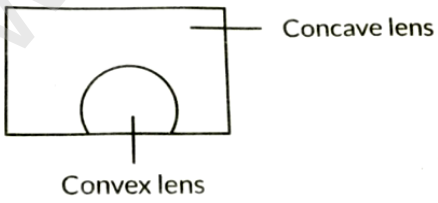
30. (i) The result of a cross between two F1 individuals. (1)

(ii) Traits such as intelligence and knowledge cannot be passed on to the next generation because these are acquired traits which an individual develop. (1)

(iii) The sex of children is decided by the X or Y chromosome inherited from the father. Since a male has XY chromosomes and a female has only XX chromosomes. (1)

3

31. (i) Presbyopia (0.5)
(ii) due to gradual weakening of ciliary muscles and diminishing flexibility of eye lens due to ageing (1)
(iii) Can be corrected by using bifocal lenses (0.5)
diagram (0.5)
labelling (0.5)



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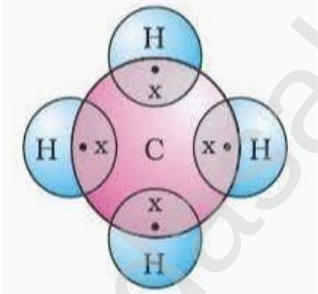
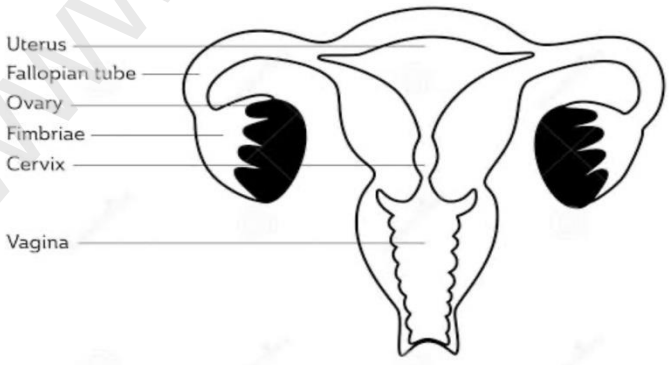
32. For series,
$Rs = R + 2R = 3R$ (0.5)
$P_1 = V^2/ 3R$ (0.5)
For parallel ,
$Rp = 2R /3.$ (0.5)
$P_2 = V^2/ (2R/3) = 3V^2/ 2R$ (0.5)
Ratio :
$P_1/P_2 = (V^2/ 3R) \times (2R / 3V^2)$ (0.5)
$P_1/P_2 = 2/9.$ (0.5)

3

33. Neatly labelled diagram showing magnetic field lines around a straight current 3

	carrying conductor, marking direction of current and direction of magnetic field correctly (0.5+0.5+0.5) Name of the rule -right hand thumb rule (0.5) Statement of the rule (1)	
	Section – D **Question No. 34 to 36 are long answer questions.**	
34.	(a) X = CH_3COOH / Ethanoic acid / Acetic acid (0.5) Y = C_2H_5OH / Ethanol (0.5) Z = $CH_3COOC_2H_5$ / ethyl ethanoate (0.5) Equation (1) $CH_3COOH + C_2H_5OH \xrightarrow[\text{catlyst}]{\text{Acid}} CH_3COOC_2H_5 + H_2O$ Esterification (0.5) Equation (1) $CH_3COOC_2H_5 \xrightarrow{NaOH} C_2H_5OH + CH_3COONa$ Saponification reaction (0.5) It is used in the preparation of soap. (0.5) **OR** (i) Methane (0.5) single covalent bond (0.5) electron dot structure (1)  (ii) Biogas, compressed natural gas (0.5+0.5) (iii) Alkane (0.5) C_nH_{2n+2} (0.5) (iv) Blue and clean flame (1)	5
35.	A. Diagram (1) Labelling Any 4 (4 X 0.5 = 2)  (ii) Mechanical barriers, chemical barriers, IUCDs, and Surgical methods. (0.5x4=2) **OR** B. (a) Leishmania - Binary Fission (0.5 + 0.5) (b) Bryophyllum - Vegetative propagation - Leaf (0.5+0.5) (c) Planaria - Fragmentation (0.5 +0.5) (ii) Pollination - the transfer of pollen from anther to stigma. (1) Fertilisation - The fusion of male and female gametes. (1)	5
36.	(a) Ra = 5Ω + 15Ω + 20Ω = 40 Ω (0.5)	5

	(b) Rb = 30 Ω (0.5) Rc = 60 Ω (0.5) 1/ Rp = 1/Ra + 1/ Rb (0.5) Rp = 60/3 = 20 Ω (0.5) (c) Rs = Ra + Rp Rs = 40 Ω + 20 Ω = 60 Ω (0.5) V= 6 V I = V / R (0.5) I = 6V / 60 Ω I = 0.1 A (0.5) (d) two relevant disadvantages (0.5 + 0.5) **OR** (a) circuit diagram with 3 resistors in parallel and ammeter and voltmeter connected appropriately in the circuit (1) Explanation of the activity showing $I = I_1 + I_2 + I_3$; V remains same. Deriving at the relation- $1/Rp = 1/R_1 + 1/R_2 + 1/R_3$ (2) (b) $1/Rp = 1/R_1 + 1/R_2$ (0.5) Rp = 12/2 =6 Ω (0.5) I =V / R (0.5) I = 6 V / 6 Ω = 1 A (0.5)	
SECTION – E **Question 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.	(a) Anode - chlorine gas, cathode - hydrogen gas (0.5+0.5) (b) Chlorine-alkali process as the product to obtained are alkali, chlorine gas and hydrogen gas. (1) (c) When electricity is passed through an aqueous solution of sodium chloride (called brine), it decomposes to form sodium hydroxide. (1) $2NaCl(aq) + 2H_2O(l) \rightarrow 2NaOH(aq) + Cl_2(g) + H_2(g)$ (1) OR (c) chlorine - water treatment, PVC, CFC or any other (1) Hydrogen - fuel, margarine, preparation of ammonia or any other (1)	4
38.	(a) Cytokinins (1) (b) Closing of leaves in touch me not plant. (1) (c) Elongation of stem (1) germination of seed (1) OR (c) The bending of stem towards the light is called phototropism (1) Auxins (1)	4
39.	(a) convex or converging lens (1) (b) negative sign (0.5) as itforms real, inverted image (0.5) (c) f=+20 cm; u = -21 cm; 1/f = 1/v - 1/u (0.5) 1/v = 1/20 -1/21 (0.5) Finding v = +420 cm (with correct unit) (1) (OR) (c) correct ray diagram with image characteristics (2) (½ mark to be cut for not drawing arrow marks)	4

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