INDIAN SCHOOL AL WADI AL KABIR

SECOND REHEARSAL EXAMINATION 2024-25

Subject: SCIENCE – (086)

MARKING SCHEME

SET I

Max. Marks: 80 **Date: 05/02/2025**

General Instructions:

Read the following instructions very carefully and strictly follow them:

1. This question paper comprises 39 questions. All questions are compulsory.

2. Section A would have 16 simple/complex MCQs and 04 Assertion-Reasoning type questions carrying 1 mark

each.

3. Section B would have 6 Short Answer (SA) type questions carrying 02 marks each.

4. Section C would have 7 Short Answer (SA) type questions carrying 03 marks each.

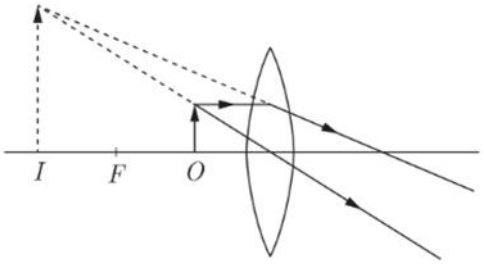
5. Section D would have 3 Long Answer (LA) type questions carrying 05 marks each.

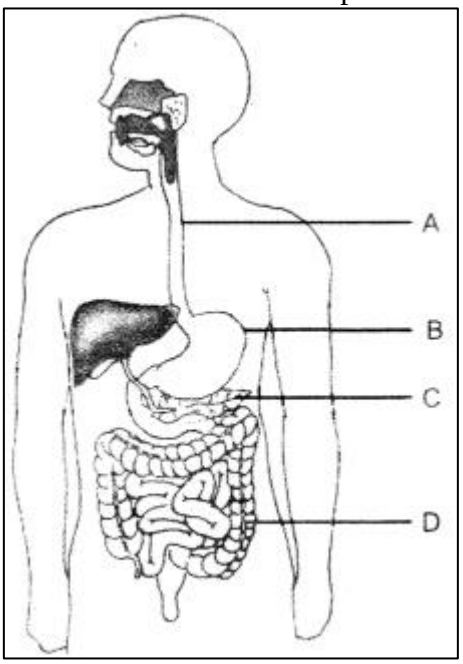
6. Section E would have 3 source based/case based/passage based/integrated units of assessment (04 marks

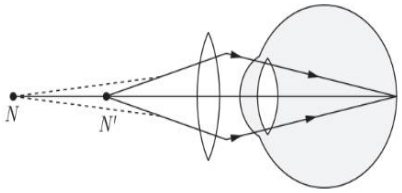
each) with sub-parts of the values of 1 & 2 marks.

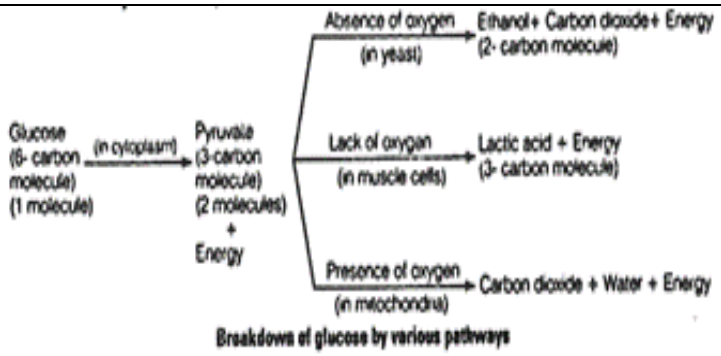
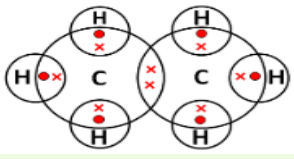
7. Draw neat figures wherever required.

Section-A **Question 1 to 16 are multiple choice questions. Only one of the choices is correct. Select and write the correct choice as well as the answer to these questions.**		
1.	D. (b), (c) and (d)	
2.	B. Sodium hydroxide is a base which is soluble in water while ferric hydroxide is also a base but it is not soluble in water.	
3.	D. Baking soda (sodium hydrogen carbonate)	
4.	D. Basic Copper carbonate	
5.	B. ZY	
6.	C.Fe	
7.	C.(a), (b) and (d)	
8.	C – Concave and virtual	
9.	B – Red	
10.	(d) Mouth → Oesophagus → stomach → small intestine → large intestine	1

11.	(c) Transport of food	1
12.	(c) Percentage of carbon dioxide is more in the exhaled air.	1
13.	(a) The plants also use electrical-chemical means to convey this information from cell to cell.	1
14.	(c) (i), (ii) and (iv)	1
15.	(c) Tiger, grass, snake, frog	1
16.	(d) Composting	1
	Assertion–Reason type questions Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below: A. Both A and R are true, and R is the correct explanation of A. B. Both A and R are true, and R is not the correct explanation of A. C. A is true but R is false. D. A is false but R is true	
17.	(c) Assertion (A) is true but reason (R) is false.	
18.	A. Both A and R are true, and R is the correct explanation of A.	
19.	C. A is true but R is false	
20.	D. A is false but R is true	1
	Section B **Question No. 21 to 26 are very short answer questions**	
21.	Test both products (MgO and SO2) using red and blue wet litmus paper. Metal oxides (product of burning a metal) like MgO are basic in nature, and turn red litmus blue, but have no effect on blue litmus. Non-metal oxides (product of burning s non-metal) like SO2 are acidic in nature, and turn blue litmus red, but have no effect on red litmus.	
22.	 Type of lens: Convex lens	1 + 1
23.	**:** a) The electrical resistivity of a material is defined as the resistance offered to current flow by a conductor of unit length having unit area of cross section. **1/2 mark** b) If the length of the wire is doubled then its new length $l^1 = 2l$ $R = \frac{\rho l}{A}$ **1/2 mark** $I = \frac{V}{R}$ **1/2 mark** $I = VA/\rho l^1 = ½ I$ OR	

	a) If a current of 1 A flows through a wire on applying a potential difference of 1 V across it then the resistance of the wire is said to be 1Ω. **1/2 mark** b) Initial length of the wire = L, new length L^1= 2L Area of cross section = A, new area A^1= A/2 $R = \frac{\rho L}{A}$, $R^1 = \frac{\rho L^1}{A^1}$ **1/2 mark** (i) $R^1 = \frac{\rho 2L}{A/2}$ = 4R **1/2 mark** (ii) Resistivity of the wire will be same. **1/2 mark**	
24.	Elaborate the functions of parts marked as A and C.  A – oesophagus - It connects your mouth to your stomach. When you swallow food, the walls of the oesophagus squeeze together (contract). This moves the food down the oesophagus to the stomach. C – Pancreas - makes pancreatic juices called enzymes. These enzymes break down sugars, fats, and starches. Your pancreas also helps your digestive system by making hormones.	1+1
25.	***Attempt either option A or B.*** (a) It is because anaerobic respiration takes place and lactic acid, and energy are produced. we get muscles cramp. Aerobic respiration of glucose takes place in the mitochondria and produces CO_2 and H_2O along with energy in the form of ATP. OR (b) The other name for lymph is 'Tissue Fluid'. Its two functions are: 1. Transportation of white blood cells, 2. Removal of interstitial fluid. (any other valid point)	1 + 1
26.	Decomposers in ecosystems act as environmental cleaners by decaying dead plants and animals. They aid in the recycling of nutrients. They make room for a new life in the biosphere by decaying the dead. (any two relevant points)	1 + 1

Section-C **Question No. 27 to 33 are short answer questions.**		
27.	A. Cinnabar (1/2 M) $HgS + O_2 \rightarrow HgO + SO_2$ (1 M) $HgO \rightarrow Hg + O_2$ (1 M) B. (A) - Aluminium (B) - Al_2O_3 (1 M)	2 + 1
28.	A. (i)Dilution of a concentrated acid is a highly exothermic reaction. It is important to add acid into water with continuous stirring. (ii) Dilution of an acid or base lead to a decrease in the concentration of ions (H_3O^+ and OH^-) per unit volume. Therefore, the (H_3O^+/OH^-) ratio is also reduced. (iii) If the concentration of H_3O^+ ions increases in a solution, the pH will decrease. As for the probable colors of pH paper, pH range 0-5 to 2-0 typically corresponds to acidic conditions. The probable colors of pH paper in this range can be red or orange, indicating acidity. B. Ans: (i) The electrolysis of brine is called the 'Chlor-alkali process' because it produces chlorine (chlor) and sodium hydroxide (alkali). The chemical equation involved in this process is: $2NaCl + 2H_2O \rightarrow 2NaOH + Cl_2 + H_2$ (ii) Two observations when hydrated copper sulphate crystals are heated in a dry test-tube are: (i) The colour of copper sulphate crystals becomes white after heating. (ii) Water droplets are noticed at the mouth side of the boiling tube, which are obtained from the water of crystallization.	1 + 1 + 1
29.	**a)**  **1 mark** b) u = -25 cm, v = -40 cm **½ mark** 1/f = 1/v – 1/u **½ mark** F = 200/3 cm P = 1/f **½ mark** = + 1.5 D **½ mark**	3
30.	**Ans:** a) $H = I^2Rt$ **½ mark** Any one application: Electric iron, geyser, toaster etc ½ mark b) H=VIt **½ mark** I = q/t **½ mark** t= 2 hr = 7200 s **½ mark** H = 3840000 J **½ mark**	3
31.	: a) Magnetic field lines go into the paper at P (inwards) and come out of the paper at Q (outwards). ½ + ½ mark	3

	The strength of the magnetic field is larger at the point located closer, i.e. at Q. ½ mark b) At the centre of the current carrying circular loop. ½ mark c) If two magnetic field lines intersect each other, at the point of intersection there will be two tangents with two directions of the magnetic field can be drawn. This is not possible. 1 mark	
32.	 Breakdown of glucose by various pathways	3
33.	Mendel crossed pure tall pea plants (TT) with pure short pea plants (tt) and obtained F1 progeny. When the plants of F1 progeny were self-pollinated, plants of F2 progeny were obtained. (a) Tall (Tt) (b) The gene for shortness is not expressed in plants of F1 progeny because it is a recessive trait which cannot express itself in the presence of dominant Tall trait. (law of dominance) Relevant explanation (c) Phenotype ratio – 3:1, Genotype ratio 1:2:1 Mendel observed that although different alleles could influence a single trait, they remained indivisible and could be inherited separately. Additionally, the allele could be present but invisible in one generation, only to reappear in the next generation.	3
Section-D **Question No. 34 to 36 are long answer questions.**		
34.	A. i. definition + structure (1+1/2+1/2) ii. structure (1/2 +1/2+1/2) iii. No. Detergents cannot be used to check the hardness of the water, as they lather easily in both soft and hard water. (1/2 +1) OR B (i) A. ethene B. ethanoic acid C. ethane D. ethanol (ii)  (iii) $CH_3CH_2OH \xrightarrow{conc.\ H_2SO_4} CH_2 = CH_2 + H_2O$	

(iv) $$CH_3CH_2OH(l) + 2[O] \xrightarrow[Alkaline\ KMnO_4;\ Heat]{or\ acidified\ K_2Cr_2O_7} CH_3COOH(l) + H_2O(l)$$

(v) $$C_2H_5OH + CH_3COOH \xrightarrow{H^+} CH_3COOC_2H_5 + H_2O$$

35. **A:** 5

i)I = 1A

$R_1 = 5\ \Omega$

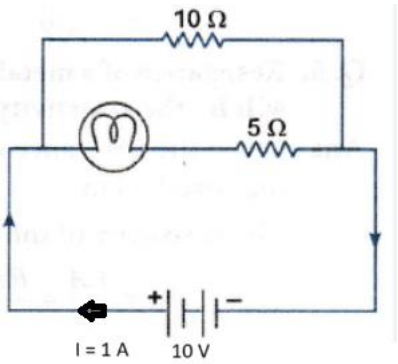
V= 10 V

R_2=?

V = IR ½ mark

V= I (R_1+ R_2)

R_2= 5 Ω ½ mark



ii) 1½ mark

iii) 1/ R = $1/R_1$+$1/R_S$ ½ mark

R= 5 Ω ½ mark

Hence I = V/R = 10/5 = 2 A. ½ mark

Thus, 1 A current will flow through 10 Ω resistor and 1 A will flow through the lamp and conductor of 5Ω resistance. Hence, there will be no change in current flowing through 5Ω conductor. ½ mark

Also, there will be no change in potential difference across the lamp. ½ mark

OR

B:

i) 1/ R = $1/R_1$+$1/R_2$ ½ mark

R = 4 Ω ½ mark

ii) I = V/R ½ mark

I = 1A ½ mark

iii) V = IR ½ mark

V = 4 V ½ mark

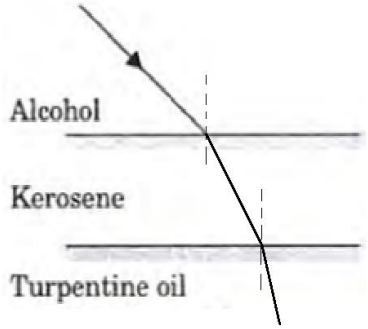
iv) P = I^2R ½ mark

P = 4 W ½ mark

	v) No difference in ammeter readings as same current flows through each element in a series circuit. ½ + ½ mark	
36.	***Attempt either option A or B.*** (a) (i) Planaria – Regeneration Regeneration of organism from its cut body parts occurs by the process of growth and development. Regeneration is an asexual mode of reproduction common in lower plants and animals. (ii) Hydra – Budding In budding, a small part of the body of the parent organism grows out as a bud which on detaching forms a new organism. Budding occurs in yeast, some protozoans and certain lower animals. (iii) Rhizopus – Spores Spores are usually produced in sporangia. Spore formation is a common method of an asexual reproduction in bacteria and most of the fungi. (b) The leaves of a Bryophyllum have special type of buds in their margins. These buds may get detached from the leaves, fall to ground and then grow to produce new Bryophyllum plants. The buds can also drop to the ground together with the leaf and then grow to produce new plants. (c) Advantages of vegetative propagation are: It is a quick method of propagation. The new plants produced by artificial vegetative propagation are exactly like the parent plants. Many plants can be grown from one plant by vegetative propagation. OR B (a) Identify the modes of asexual reproduction in each of the following organisms: (i) Hydra - Budding (ii) Planaria - Regeneration (iii) Amoeba – Fission –(binary) (iv) Spirogyra - Fragmentation (v) Rhizopus – Spore formation (b) i. It helps in preservation of characters of the plants through successive generation. ii. Seedless plants can be grown through vegetative reproduction. Through cutting and grafting methods, flowers and fruits can be grown in a shorter time. iii. It is cheaper, easier and more rapid method of plant propagation. (c) Flower fertilization requires both male and female gametes. If pollination does not occur it means that the male gamete is not available, hence fertilization cannot take place.	5

Section – E

Question No. 37 to 39 are case-based/data-based questions.

37.	A .i) Acid – HCl, Base – NaOH (1M). (ii) ca 2+ and SO4 2- (1M). B. (i) $CH_3COOC_2H_5 + NaOH \rightarrow CH_3COONa + C_2H_5OH$ (1M). (ii) $CH_3COOH + NaOH \rightarrow CH_3COONa + H_2O$ (1M). OR C. It is because hydrogen atom of methane gets substituted by chlorine atom to form chloromethane, therefore, it is called a substitution reaction. (1M). Equation(1M)	4
38.	(i) No refraction occurs even when light travels from one medium to another normally (normal incidence). **1 mark** (ii)  **1 mark** (iii) $n_{xy} = n_x/n_y = 2/3$ **½ mark** $n_{yz} = n_y/n_z = 4/3$ **½ mark** $n_x/n_y \times n_y/n_z$ $= 2/3 \times 4/3$ $= 8/9 = n_{xz}$ **½ mark** $n_{zx} = 9/8$ **½ mark** **OR** $n_{kw} = v_w / v_k$ **½ mark** $= 1.96 \times 10^8 / 2.08 \times 10^8$ $= 0.942$ **½ mark** When light travels from water to kerosene, the ray bends **away from the normal.** **1 mark**	4
39.	Pollination is an important process in sexual reproduction of plants. It is an essential process that facilitates fertilisation in plants. Pollinating agents can be wind, water, insects and birds. Several changes take place in the flower after the fertilization has taken place.	4

	Attempt either subpart A or B. (A) Define fertilisation. What is the fate of ovules and the ovary in a flower after fertilisation? OR (B) In a germinating seed, which parts are known as future shoot and future root? Mention the function of cotyledon. (C) Write the main difference between self-pollination and cross-pollination. (D)Name the part of the flower which attracts insects for pollination. What happens to this part after fertilisation?	
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