Series: ICJLZ43/C **SET-1** **Code No: 31/3/1**

Strictly Confidential: (For Internal and Restricted use only)
Secondary School Examination Comptt-2021
Marking Scheme – SUBJECT NAME: SCIENCE
(SUBJECT CODE: 086)
(PAPER CODE – 31/3/1)

General Instructions: -

1. You are aware that evaluation is the most important process in the actual and correct assessment of the candidates. A small mistake in evaluation may lead to serious problems which may affect the future of the candidates, education system and teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
2. **"Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, Evaluation done and several other aspects. Its' leakage to public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in News Paper/Website etc may invite action under IPC."**
3. Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one's own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. **However, while evaluating, answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and marks be awarded to them. In class-X, while evaluating two competency based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, marks should be awarded.**
4. The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.
5. Evaluators will mark(√) wherever answer is correct. For wrong answer 'X" be marked. Evaluators will not put right kind of mark while evaluating which gives an impression that answer is correct and no marks are awarded. **This is most common mistake which evaluators are committing.**
6. If a question has parts, please award marks on the right-hand side for each part. Marks awarded for different parts of the question should then be totaled up and written in the left-hand margin and encircled. This may be followed strictly.
7. If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.
8. If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out.
9. No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
10. A full scale of marks **80** (example 0-100 marks as given in Question Paper) has to be used. Please do not hesitate to award full marks if the answer deserves it.

11. Every examiner has to necessarily do evaluation work for full working hours i.e. 8 hours every day and evaluate 20 answer books per day in main subjects and 25 answer books per day in other subjects (Details are given in Spot Guidelines).
12. Ensure that you do not make the following common types of errors committed by the Examiner in the past:-
    - Leaving answer or part thereof unassessed in an answer book.
    - Giving more marks for an answer than assigned to it.
    - Wrong totaling of marks awarded on a reply.
    - Wrong transfer of marks from the inside pages of the answer book to the title page.
    - Wrong question wise totaling on the title page.
    - Wrong totaling of marks of the two columns on the title page.
    - Wrong grand total.
    - Marks in words and figures not tallying.
    - Wrong transfer of marks from the answer book to online award list.
    - Answers marked as correct, but marks not awarded. (Ensure that the right tick mark is correctly and clearly indicated. It should merely be a line. Same is with the X for incorrect answer.)
    - Half or a part of answer marked correct and the rest as wrong, but no marks awarded.

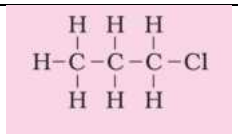
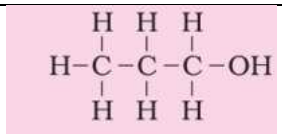
13. While evaluating the answer books if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0)Marks.

14. Any unassessed portion, non-carrying over of marks to the title page, or totaling error detected by the candidate shall damage the prestige of all the personnel engaged in the evaluation work as also of the Board. Hence, in order to uphold the prestige of all concerned, it is again reiterated that the instructions be followed meticulously and judiciously.

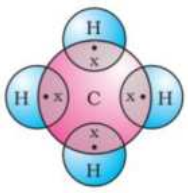
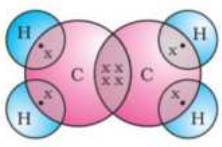
15. The Examiners should acquaint themselves with the guidelines given in the Guidelines for spot Evaluation before starting the actual evaluation.

16. Every Examiner shall also ensure that all the answers are evaluated, marks carried over to the title page, correctly totaled and written in figures and words.

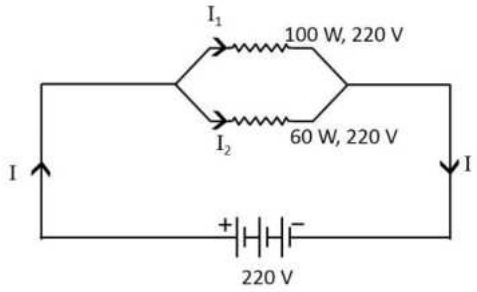
17. The Board permits candidates to obtain photocopy of the Answer Book on request in an RTI application and also separately as a part of the re-evaluation process on payment of the processing charges.

MARKING SCHEME (2020 – 21)			
SET 31/3/1			
S.No.	**VALUE POINTS/ EXPECTED ANSWER**	**MARKS**	**TOTAL MARKS**
	SECTION A		
1. (a)	**When the number of atoms of each element are equal on both sides of the equation.**	**1**	
	OR		
(b)	**Because in respiration glucose is oxidized and releases energy**	**1**	**1**
2.	**Combination reaction/ Exothermic reaction**	**1**	**1**
3.	**Litmus is used to distinguish between an acid and a base**	**1**	**1**
4. (a)	**Because potassium is highly reactive and catches fire when kept in open / water.**	**1**	
	OR		
(b)	**Graphite / Diamond / Fullerene**	**1**	**1**
5.	 /  **(Any other example of organic compound containing O, N, Halogen, S etc.)**	**1**	**1**
6. (a)	**Since the blood emerges from heart / flows with high pressure**	**1**	
	OR		
(b)	**ATP / Adenosine Triphosphate**	**1**	**1**
7.	**A process in which an organism breaks into many pieces upon maturation and each piece / fragment grows / develops into a new individual.**	**1**	**1**
8.	**(B) / Atmospheric refraction of starlight**	**1**	**1**
9. (a)	**When the population of bacteria living in temperate waters is exposed to sudden rise in temperature of water, most of the bacteria will die, but the few variants resistant to heat will survive (or any other suitable example).**	**1**	
	OR		
(b)	**Free earlobes / Attached earlobes**	**1**	**1**
10.	**Transmission of traits / characters from parents to offspring / next generation.**	**1**	**1**
11.	**This means that the ratio of the speed of light in air to the speed of light in glass is 1.50**	**1**	**1**

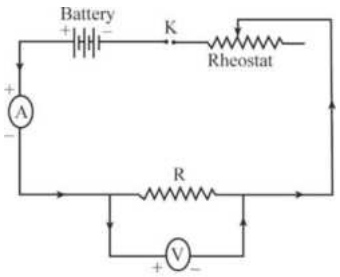
12. (a) (b)	Two magnetic field lines do not intersect with each other because if they intersect then at the point of intersection, the compass needle will show two different directions simultaneously which is not possible. **OR** An insulated copper wire wound over a soft iron core converts it into a magnet when an electric current is passed through it. The magnet so formed is called an electromagnet.	1 1	1
13.	Galvanometer	1	1
14.	(A) / Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).	1	1
15.	(B) / Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).	1	1
16. (a) (b)	(C) / Assertion (A) is true, but Reason (R) is false. **OR** (C) / Assertion (A) is true, but Reason (R) is false.	1 1	1
17. (i) 17. (ii) 17. (iii) 17. (iv) 17. (v)	(D) / separate the naturally occurring elements from man-made ones. (B) / B and C (A) / Elements were arranged in groups of eight (A) / Germanium (C) / R_2O_3, RH_3 **(Any four)**	1 X 4	4
18. (i) 18. (ii) 18. (iii) 18. (iv) 18. (v)	(D) / in the body of the living organism (C) / Respiration (D) / Synthesize waste materials (A) /Autotrophic (D) / All of the above **(Any four)**	1 X 4	4
19. (i) 19. (ii) 19. (iii) 19. (iv) 19. (v)	(A) / dispersion of sunlight by tiny water droplets (B) / angle of incidence and angle of emergence (D) / Scattering of light (C) / Atmospheric refraction of light (C) / I and II **(Any four)**	1 X 4	4

20. (i)	**(D) / small bar magnet pivoted ai its centre of mass**		
20. (ii)	**(C) / the magnetic north pole of the Earth's magnet is located very close to its south pole** **NOTE: (C) is the correct option, marks can be awarded for (A) and (B) options also.**		
20. (iii)	**(D) / I and III**		
20. (iv)	**(B) / uniform inside it at all points**		
20. (v)	**(A) / A neutron** **(Any four)**	**1 X 4**	**4**
	SECTION B		
21.	**Reactants** **HNO_3 - Nitric Acid** **$Ca(OH)_2$ - Calcium Hydroxide** **Products** **$Ca(NO_3)_2$ - Calcium Nitrate** **H_2O -Water**	**½** **½** **½** **½**	**2**
22. (a) **(b)**	• **HCl** • **Being strong acid gives more H^+ ions than acetic acid** • **Sulphuric acid / H_2SO_4 / nitric acid / HNO_3** **(Any other strong acid)** **OR** **Oxides that react both with acids and bases are known as amphoteric oxides.** **Eg. Aluminium oxide / Al_2O_3 / Zinc oxide / ZnO (Any one)**	**½** **½** **1** **1** **1**	**2**
23. (a) **(b)**	**Because gold and silver are most malleable / ductile / least reactive.** **Because such metals are good conductors of heat / have high melting points.**	**1** **1**	**2**
24. (a) **(b)**	**Carbon has small size. This enables the nucleus to hold on to the shared pairs of electrons strongly, so it forms strong bonds.** **OR**  **Methane (CH_4)**  **Ethene (C_2H_4)**	**2** **1** **1**	**2**

25. (a) **(b)**	**1) Gametes** **2) Zygote** **Female**	**½** **½** **1**	**2**
26.	**The interaction of living organism with the non-living components in an area of the environment.** **Natural: forests / deserts / oceans / ponds / lakes** **Man-made: crop field / garden / aquarium / zoo**	**1** **½** **½**	**2**
27.	**A reaction in which more reactive element displaces less reactive element from its compound is known as a displacement reaction.** • **$Fe(s) + CuSO_4(aq) \rightarrow FeSO_4(aq) + Cu(s)$** **(any other reaction of iron with compound of element less reactive than iron)** • **Zinc / lead** **(or any other element having reactivity comparable to iron)** • **As gold is least reactive.**	**1** **1** **½** **½**	**3**
28.	• **Aqueous solution of sodium chloride (brine) decomposes to form sodium hydroxide.** • **Chlor-alkali process** • **$2NaCl(aq) + 2H_2O(l) \rightarrow 2NaOH(aq) + Cl_2(g) + H_2(g)$** **(Ignore balancing)** • **Anode-Cl_2 / Chlorine gas** • **Cathode -H_2 / Hydrogen gas** • **Hydrogen chloride / HCl**	**½** **½** **½** **½** **½** **½**	**3**
29.	• **2,8,8,2** • **Metal** • **Valency: 2** • **Name: Calcium Chloride** • **Formula: $CaCl_2$**	**1** **½** **½** **½** **½**	**3**
30.	**(i) Rhizopus/ Bread Mould (or any other suitable organism)** **(ii)** • **Reproductive part - Sporangia / Spores** • **Non reproductive part – Hyphae** • **Large number of spores are formed / Survive in unfavourable conditions / Protected with thick wall.** **(Any two)**	**1** **½** **½** **½ + ½**	**3**
31.	**Placenta is a special tissue which provides nutrition to the embryo from the mother's blood.** **Role :** **1) Provides a large surface area to transport glucose and O_2 from mother's blood to embryo.**	**1** **1** **1**	**3**

	2) Removal of waste material from the developing embryo to the mother's blood.		
32.	 **Current drawn by Lamp rated 100 W at 220 V** $\mathbf{I_1 = \frac{P_1}{V} = \frac{100}{220} = \frac{5}{11} A}$ **Current drawn by Lamp rated 60 W at 220 V** $\mathbf{I_2 = \frac{P_2}{V} = \frac{60}{220} = \frac{3}{11} A}$ **Total current drawn by two lamps in parallel arrangement** $I = I_1 + I_2$ $I = \frac{5}{11} + \frac{3}{11} = \frac{8}{11} A = 0.73\ A$	**1** ½ ½ ½ ½	**3**
33.	**Consumers are the organisms which consume the food produced by producers directly or indirectly.** **4 categories-** **1. Herbivores** **2. Carnivores** **3. Omnivores** **4. Parasites** **(Any other suitable categorization)**	**1** **½ X 4**	**3**
34. (a) (i) **(ii)** **(b) (i)**	**Herbivores eat grass / plants/ plant products, so they need a longer small intestine to allow the cellulose to be digested as compared to carnivores which eat meat.** • **Name: Hydrochloric Acid** **Role: Creates an acidic medium which facilitates the action of pepsin/ kills the germs** • **Name: Pepsin** **Role: Digestion of proteins** • **Name: Mucus** **Role: Protects the inner lining of the stomach from acid** **OR** **Plant roots absorb water from the soil because of difference in concentration of ions between the roots and the soil. Water conduction in plants takes place through xylem tissues -vessels and**	**2** ½ ½ ½ ½ ½ ½ **3**	

(ii)	tracheids. Transpiration pull generates a suction which pulls water from the roots to leaves. • It would lead to the lowering of blood pressure. • Yes / blood has platelets which will form clot at the point of injury.	 1 1	5
35 (a)	• A transparent material bounded by two surfaces of which one or both surfaces are spherical / curved. • (i) Converging lens (ii) Diverging lens • Double concave lens is a diverging lens.	1 ½ ½ ½	
(b)	• $f = +15\ cm,\ v = +20\ cm,\ \ u = ?$ • $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$ $\Rightarrow \frac{1}{u} = \frac{1}{v} - \frac{1}{f}$ $= \frac{1}{20\ cm} - \frac{1}{15\ cm}$ $= \frac{3-4}{60} cm$ • $u = -60$ cm • Image is diminished	½ ½ 1 ½	5
36 (a) (i)	• A fuse is a safety device / used in domestic electric circuits to prevent damages from short circuiting or overloading. • An alloy / metal of appropriate (lower) melting point / aluminium / copper / iron / lead etc. • In series	½ ½ ½	
(ii)	1A, 2A, 3A, 5A, 10A (any other appropriate value)	½	
(iii)	• To protect the circuits and appliances by stopping the flow of unduly high electric current. • If current larger than the specified / rated value flows through the circuit, the temperature of the fuse wire increases, this melts the fuse wire and breaks the circuit.	½ ½	
(iv)	Power = 1 kW; V = 220 V ; I = ? Formula used • P = VI	 ½	

	$\Rightarrow I = \frac{P}{V} = \frac{1000}{220}$	½	
	$= 4.54\ A$	½	
	Rating of fuse will be 5A and above	½	
	(Deduct ½ marks if unit is wrong or not mentioned)		
	OR		
(b) (i)		**2**	
(ii)	• $V \propto I$ **or** $\frac{V}{I} = \text{constant}$	**1**	
	For 1st wire		
	$R_1 = \rho\frac{l}{A} = 4\ \Omega$	½	
	For 2nd wire,		
	$R_2 = \rho\frac{l/2}{2A} = \frac{1}{4}\rho\frac{l}{A}$	½	
	$R_2 = \frac{1}{4}\ R_1$	½	**5**
	$R_2 = 1\ \Omega$	½	