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Secondary School Examination September-2020

Marking Scheme – SCIENCE (086)

(PAPER CODE : 31 C-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 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.

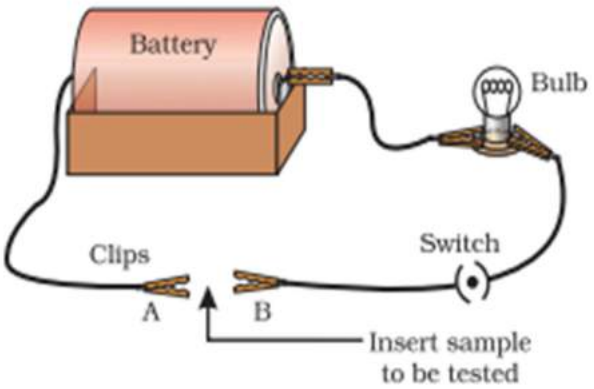
14. Any unassessed portion, non-carrying over of marks to the title page, or totaling error detected by the candidate shall damage the prestige of all the personnel engaged in the evaluation work as also of the Board. Hence, in order to uphold the prestige of all concerned, it is again reiterated that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

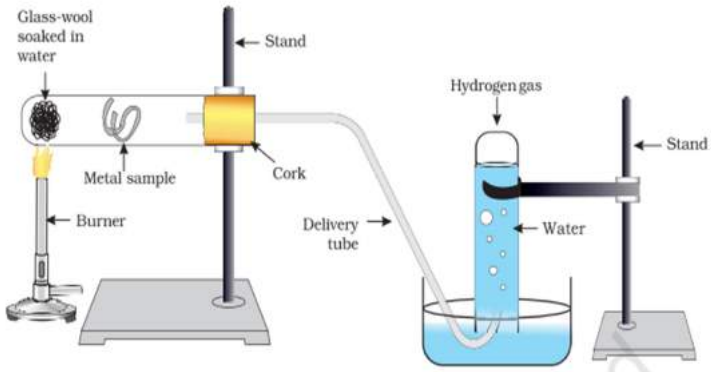
15. The Examiners should acquaint themselves with the guidelines given in the Guidelines for spot Evaluation before starting the actual evaluation.

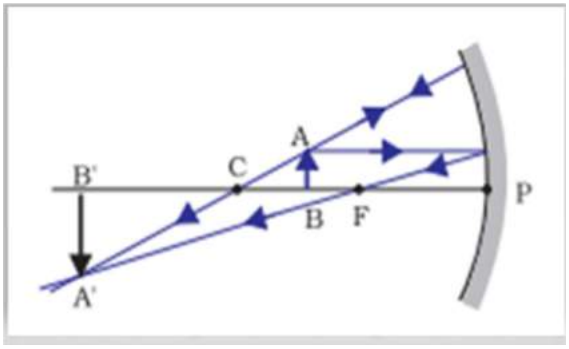
16. Every Examiner shall also ensure that all the answers are evaluated, marks carried over to the title page, correctly totaled and written in figures and words.

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 – CLASS X SCIENCE (2019-20) QUESTION PAPER CODE : 31/C/1		
S.NO.	**CONTENT / ANSWERS**	**VALUE POINTS**	**TOTAL**
1.	Warts and HIV – AIDs / Syphilis / Gonorrhoea (any two)	½+½	1
2.	The centre of the reflecting surface of a spherical mirror	1	1
3.	a) to make the study of the elements easier b) 18 groups c) (A) – It is based on atomic masses d) (D) – The recurrence of similar outer electronic configuration	1 1 1 1	1 1 1 1
4.	a) Chemical energy to heat / light energy b) (1) high calorific value (2) be easily accessible (3) ability to do a large amount of work per unit volume or mass (4) be easy to store and transport (5) Be economical (any two) c) Coal, Petroleum, Diesel, LPG (any two) d) 1. Increasing demand with industrialisation and changing lifestyles 2. Fossil fuels are in limited quantity and will be exhausted (or any other answer)	1 ½, ½ ½, ½ 1	1 1 1 1
5.	(A) - Tomato Or (A) – hydrochloric acid	1	1
6.	(B) - copper carbonate	1	1
7.	(D) – Magnesium is below calcium but above aluminium	1	1
8.	(C) – substitution reaction	1	1
9.	(B) – pollen grain Or (B) – are formed by the fusion of gametes	1	1
10.	(C) – I and II only Or	1	1

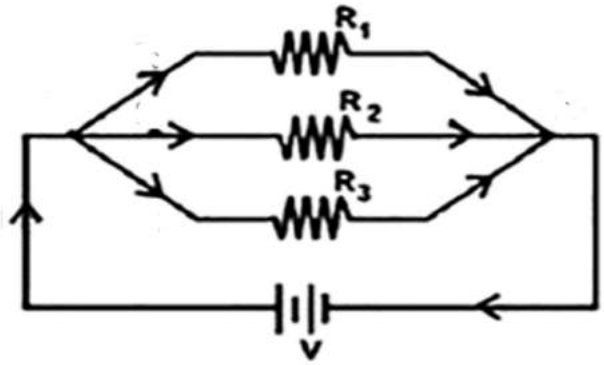
	(C) – The tigers will die		
11.	(B) – I, III and IV	1	1
12.	(B) – monoculture in the area	1	1
13.	(iii) – (A) is true but (R) is false	1	1
14.	(i) – Both (A) and (R) are true and (R) is the correct explanation of the assertion (A)	1	1
	SECTION B		
15.	• The food will get rancid / oxidised • Smell and taste changes • Antioxidants can be added / airtight containers / flush with use of nitrogen (any one)	1 ½+½ 1	3
16.	Metal carbonates / metal hydrogen carbonates + acid ⟶ salt + carbon dioxide + water • $MgCO_3 + 2HCl \longrightarrow MgCl_2 + CO_2 + H_2O$ • $Mg(HCO_3)_2 + 2HCl \longrightarrow MgCl_2 + 2CO_2 + 2H_2O$ • TEST: By passing the gas in limewater. The limewater will turn milky. Note : Give full credit (1M) for any one of the chemical equations)	1 ½ ½ 1	3
17	 Diagram Labelling (any four)	1 ½ x 4	3

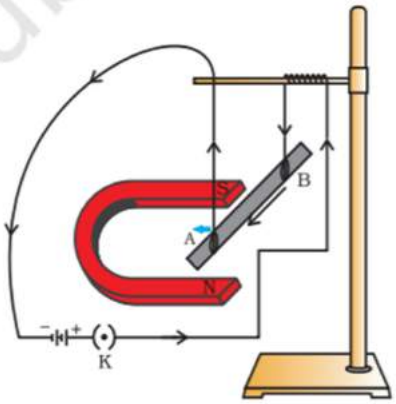
	(OR)  **Figure 3.3** *Action of steam on a metal* Diagram Labelling (any two) • Hydrogen	1 ½ +½ 1	3
18.	• Boron / silicon / germanium /arsenic / antimony/ Tellurium / Polonium (any two) • The size will decrease on the right hand side • Increase in nuclear charge	½, ½ 1 1	3
19.	• The small intestine has numerous finger like projections called villi which increase the surface area for absorption. • The villi are richly supplied with blood vessels which take the absorbed food to each and every cell of the body. • The digested food is necessary to be absorbed for obtaining energy / building of new tissues / repair of old or worn out tissues. (any one)	1 1 1	3
20.	• Xylem tissue Conduction process : • At the roots, cells in contact with soil actively take up the ions • A difference in the concentration of ions is developed between the roots and the soil • This difference brings movement of water from the soil into the roots • Water therefore is conducted upwards in a plant through xylem	1 ½x4	3

21.	• Vegetative propagation • Asexual **<u>Advantages</u>**: 1. Plants can bear flowers and fruits earlier 2. All plants produce are genetically similar to the parent plant 3. Plants that have lost the capacity to produce viable seeds can be grown **(OR)** • Budding • <u>Activity</u> – 1. Dissolve sugar in water 2. Add yeast to it and keep it in a warm place 3. After 2 hours, put a drop of yeast culture on a slide and observe under microscope. • Hydra	1 ½ 3 x ½ 1 ½ x 3 ½	 3 3
22.	a)Between F and C • Ray diagram  b) Magnification produced is (-)1 (if 1 is written deduct ½ mark) Image formed is of same size, real and inverted (Note : If a candidate writes give ½ mark)	½ 1½ 1	 3
23.	a) Concave mirror –forms erect and enlarged image b) Concave mirror –forms erect and enlarged image c) Convex mirror – wider field of view and forms erect image **(OR)**	½ x 6	3

	a) Convex lens / converging lens b) i) real ii) inverted iii) magnified / enlarged iv) forms beyond $2F_2$ (any three characteristics) c) at $2F_1$	1 1½ ½	 3
24.	a) Iron filings align themselves along the magnetic field lines. b) shape of magnetic field c) because magnetic field lines are closed curves	1 1 1	 3
	SECTION C		
25.	A – C_2H_5COOH / CH_3CH_2COOH / An acid B – CH_3CH_2COONa / C_2H_5COONa / a Sodium salt C – C_2H_5OH / CH_3CH_2OH / an alcohol D – $CH_3CH_2COOCH_2CH_3$ /$C_2H_5COOC_2H_5$ /an Ester Equations : $2CH_3CH_2COOH + Na \longrightarrow 2CH_3CH_2COONa + H_2$ (A) (B) $CH_3CH_2COOH + C_2H_5OH \xrightarrow{\text{Conc. } H_2SO_4} CH_3CH_2COOCH_2CH_3 + H_2O$ (A) (C) (D) $CH_3CH_2COOH + NaOH \longrightarrow$ 'B' + H_2O (A) $CH_3CH_2COOCH_2CH_3 + NaOH \longrightarrow CH_3CH_2COONa + C_2H_5OH$' (D) (B) (C) (Any 3 equations) **(OR)** a) X – Ethene /Ethyne / C_2H_4 / C_2H_2 /unsaturated hydrocarbon Y – Ethane / saturated hydrocarbon $CH_2=CH_2 + H_2 \xrightarrow{Ni} CH_3\text{-}CH_3$ b) i) $CH_3\text{-}\overset{\overset{O}{\|}}{C}\text{-}CH_2\text{–}CH_3$ ii) $CH_3CH_2CH_2CH_2COOH$ c) No • Because detergents give foam/lather with hard water	½ x 4 1 x 3 ½ ½ 1 ½,½ 1 1	 5 5

26.	Central – Brain and Spinal cord Peripheral – cranial nerves and spinal nerves • Brain is protected inside a bony box filled with cerebrospinal fluid that provide shock absorption • Spinal cord is protected in vertebral column or backbone. • Reflex actions / involuntary actions	½ +½ ½ +½ 1 1 1	5
27.	a) i. No They are not homologous organs /structure of eye in each of these organism is different from each other showing separate evolutionary origin ii. Yes because they are analogous organs/ these organs perform similar function b) Some reptiles like dinosaurs had feathers although they could not fly using feathers. Birds later on adapted the feathers for flight which proves that birds are closely related to reptiles. **(OR)** • Fossils are preserved traces of living organisms • When organisms die and get buried in the soil; they do not decompose completely; the mud retains the impression of the body parts • i) Relative method – By digging into the earth. If fossils are found close to the surface of the earth, they are recent as compared to the fossils found deep inside the earth. • ii) Dating method – By detecting the ratios of the different isotopes of the same element in the fossil material	½ 1 ½ 1 2 1 1 ½ + 1 ½ +1	5 5
28	a) Myopia – i) excessive curvature of the eye lens ii) elongation of eyeball Hypermetropia – i)focal length of the eye lens increases ii) eyeball is shortened **NOTE :** (if a student writes Presbyopia or cataract with correct reason, give 1½ marks for each defect) b) Diverging lens or concave lens $P = \frac{1}{f\ (metres)}$ P = 1	1½ 1½ ½ ½	

	$\frac{}{-2}$ m P = -0.5 D	½ ½	5
29.	a) Current is constant throughout the electric circuit. So it is impractical to connect an electric bulb and a heater in series. • When one component fails, the circuit is broken and none of the component works. b)Resistors in series, $R_1 = 6 + 4 = 10\ \Omega$ Resistors in series, $R_2 = 3 + 3 = 6\ \Omega$ $R_3 = 15\ \Omega$ R_1, R_2 and R_3 are connected in parallel So effective resistance of the circuit is given by $\frac{1}{R} = \frac{1}{10\Omega} + \frac{1}{6\Omega} + \frac{1}{15\Omega}$ $= \frac{3 + 5 + 2}{30\ \Omega} = \frac{10}{30\ \Omega}$ $R = \frac{30\ \Omega}{10} = 3\Omega$ **(OR)**  Potential difference applied across each resistors is V, then current drawn from battery $I = \frac{V}{R_p}$ Current through R_1 is $I_1 = \frac{V}{R_1}$ Similarly, $I_2 = \frac{V}{}$	1 1 ½ ½ ½ ½ 1 1 ½ ½	5

	R_2 $I_3 = \frac{V}{R_3}$ $I = I_1 + I_2 + I_3$ $\frac{V}{R_p} = \frac{V}{R_1} + \frac{V}{R_2} + \frac{V}{R_3}$ $\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ b) For minimum resistance all resistors must be connected in parallel. $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_4}$ $\frac{1}{R} = \frac{1}{20} + \frac{1}{20} + \frac{1}{20} + \frac{1}{20}$ $R = \frac{20\Omega}{4} = 5\ \Omega$	½ ½ ½ ½ ½ ½	5
30.	 Note : (1 mark for labelling + 1 mark for diagram) i)By using two connecting wires a rod suspended horizontally from stand ii)Placed a horse shoe magnet in such a way that rod lies between two poles of the magnet and the field directed upwards. For this put the north pole of the magnet vertically below and south pole vertically above the aluminium rod.	2 ½ ½ ½	

	iii)By connecting battery, key and rheostat in series with rod, current passes through rod from B to A. iv)When current passes through the rod, it gets displaced towards left, and when direction of current is reversed the rod gets displaced towards right which shows that a current carrying straight conductor experiences force perpendicular to its length and magnetic field.	1½	5