Strictly Confidential: (For Internal and Restricted use only)
Class : X Secondary School Term II Examination, 2022
Marking Scheme – Science SUBJECT CODE - 086
[Paper Code : 31/2/1]

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 totalled 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 0-40 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 30 answer books per day in main subjects and 35 answer books per day in other subjects (Details are given in Spot Guidelines). This is in view of the reduced syllabus and number of questions in question paper.
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 totalling 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 totalling on the title page.
    - Wrong totalling 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 totalling 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 totalled 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.

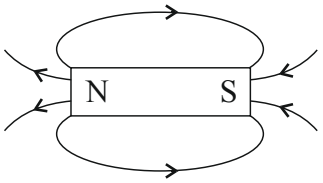
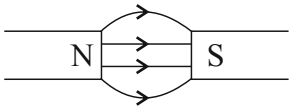
MARKING SCHEME
SECONDARY SCHOOL EXAMINATION TERM–II, 2022
SUBJECT : SCIENCE CODE – 086
[PAPER CODE : 31/2/1]

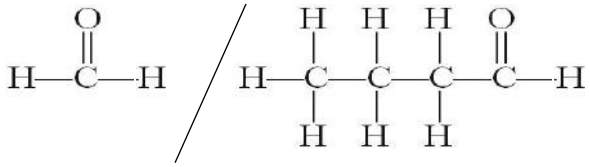
Instructions:-

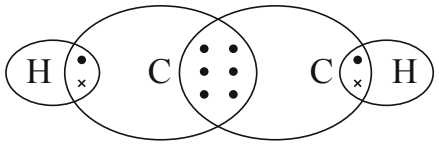
- **The marking scheme carries only suggested value points for the answers.**
- **These are only guidelines and do not constitute the complete answer.**
- **The students can have their own expression and if the expression is correct, the marks are awarded accordingly.**

Maximum Marks : 40

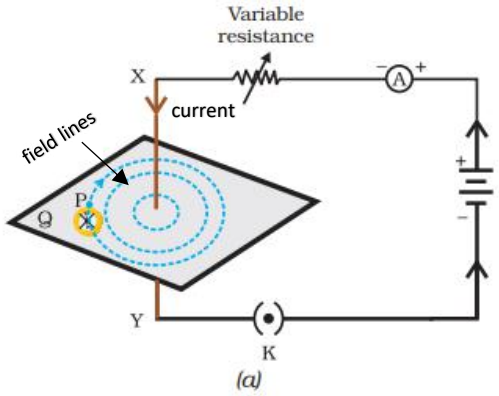
Q. No.	EXPECTED ANSWER / VALUE POINTS	Marks	Total Marks
	SECTION—A		
1.	• If carbon atom gains four electrons to form C^{4-} anion, it would be *difficult for its nucleus with six protons to hold on to ten electrons*.	1	2
	• If carbon atom loses four electrons to form C^{4+} cation, it would require *large amount of energy to remove four electrons* leaving behind a carbon cation with *six protons in its nucleus holding on to just two electrons*.	1	
	Alternative answer :-		
	It is difficult for carbon atom to gain 4 electrons (C^{4-} anion) or lose 4 electrons (C^{4+} cation) as it becomes unstable in terms of energy.	2	
2.	(i) • Electronic configuration of X is 2, 8, 1	½	2
	• Valency is 1 / +1	½	
	(ii) • X_2O / Na_2O	½	
	• Basic	½	
3.	(i) Placenta is extremely essential because it		2
	• provides nutrients /glucose / oxygen to the growing embryo.	½	
	• removes waste generated by embryo by transferring them into mother's blood through it.	½	
	(ii) Uterine lining becomes thick and spongy which is required to provide nourishment to the fertilised egg (embryo).	1	
4.	(a) Reproductive part of bread mould—Sporangia / Spores	½	
	Non-reproductive part of bread mould—Hyphae	½	

	(b) (i) Plants raised by vegetative propagation can bear flowers and fruits much earlier than those produced from seeds. (ii) It is important for plants that have lost the capacity to produce seeds. (iii) All plants formed by this method are genetically similar to the parent plant and have all its characteristics. **(Or any other) (Any *two* points)**	½ +½	2
5.	• Stamen • Pistil / Carpel • Located in the flower • The male reproductive part consists of <u>anther and filament</u> . (give full credit to labelled diagram of stamen)	½ ½ ½ ½	
	OR		
5.	• The stage at which rate of general body growth begins to slow down and the reproductive tissues begin to mature. Two common changes (i) Thick hair growing in armpits and genital area. (ii) Skin becomes oily. (iii)Thin hair on legs and arms. **(or any other) (any two)**	1 ½+½	2
6.	(a)  ***a*** or P – North pole ; Q – South pole	½	
	 ***b*** or R – North pole ; S – South pole	½	
	(b) The magnetic field lines emerge from the North-pole and merge to South-pole outside the magnet. (Inside the magnet the direction is from South pole to North pole.) **Alternative answer** :- Closed curves which emerge from North pole and merge at the South pole.	1	
	OR		
6.	(i) Maximum - when the direction of current (current carrying conductor) is perpendicular to the direction of magnetic field. (ii) Minimum - (zero) when the direction of current (current carrying conductor) is parallel / antiparallel / along the direction of magnetic field.	1 1	2

7.	• 20,000 J • Only 10% usable energy / amount of organic matter is transferred from one trophic level to the next higher trophic level in a food chain and rest 90% is lost to the environment as heat.	1 1	
	OR		
7.	(a) • Waste material generated in day-to-day lives. • Biodegradable and Non-biodegradable substances. (b) Specific enzymes are needed for the breakdown of a particular / specific substance.	½ ½ 1	2
	SECTION—B		
8.	(a) "When the elements are arranged in the order of their increasing atomic masses, then every eighth element has properties similar to the first element." (b) When the elements of a triad are arranged in the order of their increasing atomic masses, the atomic mass of the middle element is equal to the average of the atomic masses of other two elements. Examples: • Li Na K • Ca Sr Ba • Cl Br I **(Any one example)** (c) Limitations of :- • Newlands' Law : Applicable till Calcium / assumed that only 56 elements existed / unlike elements placed in the same column (Co, Ni). • Dobereiner's Triads : Only three triads were formed.	1 ½ ½ ½ ½	3
9.	(a) Aldehyde (b) $C_nH_{2n+1}CHO$ / $R-CHO$ (c) They are homologues.  **(or any other)**	1 1 ½ ½	
	OR		
9.		1	

	(a)  (b) **Covalent Compounds** — **Ionic Compounds** * low melting point — high melting point * low boiling point. — high boiling point. * poor conductors of electricity. — good conductors of electricity in molten state or aqueous solution. **(or any other difference)** **(Any Two)**	1+1	3
10.	(a) Sperm having X chromosome and sperm having Y chromosome (b) No. As male child gets only Y chromosome from his father and X chromosome from mother to have XY chromosome. (c) One type / only ovum / egg	½ + ½ ½ 1 ½	3
11.	(a) The potential difference*(V)* across the ends of a given metallic wire or conductor is directly proportional to the current(I) flowing through it, provided the temperature / physical conditions of the conductor remains the same. $V \alpha I$ V/I = Constant $V = I R$ (b) If the potential difference across the two ends of a conductor is 1 V and the current through it is 1 A, then the resistance *R* of the conductor is 1 ohm. **Alternative answer**: $1\ ohm = \frac{1\ volt}{1\ ampere}$ (c) • $R = \frac{V}{I}$ $R = \frac{2V}{0.5\ A}$ • 4 ohm	½ ½ 1 ½ ½	3
12.	(a) (i) Length of the conductor (*l*) (ii) Area of cross-section of the conductor (A)	1 1	

12.	(b) Radius of wire, $r = 0 \cdot 01$ cm $= 0 \cdot 01 \times 10^{-2}$ m Resistance, $R = 10\ \Omega$ Resistivity, $\rho = 50 \times 10^{-8}\ \Omega$m $R = \rho \frac{l}{A} = \rho \frac{l}{\pi r^2} \Rightarrow l = \frac{R\pi r^2}{\rho}$ $l = \frac{10\Omega \times 22 \times (0 \cdot 01 \times 10^{-2})^2 \text{m}}{7 \times 50 \times 10^{-8} \Omega\text{m}}$ $= \frac{22}{35}\text{m} = 0 \cdot 629$ m / 0.628 m / 0.62 m **OR** (a) Rate at which electric energy is dissipated / consumed in an electric circuit SI unit : watt / joule per second / volt . ampere (b) $E = P \times t$ (i) 2 kW × 2h = 4kWh (ii) 4 × 3.6 × 10^6 joules = 14.4×10^6 J / 1.44×10^7 J	½ ½ 1 ½ ½ ½ ½	3
13.	(a) ▪ A pond is a natural ecosystem having its own cleaning system in the form of decomposers whereas an aquarium is a man-made or artificial ecosystem having no decomposers. (b) ▪ It is due to release of chlorofluorocarbons (CFCs) in the atmosphere. ▪ The harmful UV radiations would reach earth and cause damage to different life forms on the earth / cause skin cancer in human beings.	1 1 1	3
	SECTION—C		
14.	(a) Tall with round seeds (b) Short with wrinkled seeds (c) Tall with wrinkled seeds : Short with round seeds 3 : 3 1 : 1 **OR** (c) • i) 900 ii) 100 • When two individuals showing two different contrasting characteristics are bred with each other, then in F2 progeny new combinations are seen / visible as traits are independently inherited.	1 1 1 1 ½ ½ 1	4
15.	(a) A force is exerted on the current carrying rod when it is placed perpendicular to the magnetic field.	1	

	(b) Fleming's left-hand rule : Stretch the thumb, forefinger and middle finger of your left-hand such that they are mutually perpendicular. If the first finger points to the direction of magnetic field and the second finger in the direction of current, then the thumb will point in the direction of motion or the force acting on the conductor. (c) (i) Towards left or towards west / Into U shape magnet (ii) Electric motor/ electric generator/ loudspeakers/ microphones/ electrical measuring instruments **(any two)** **OR** (c)  (a) Direction of current - downward Direction of field lines – clockwise **Alternatively**, If the direction of current is marked upwards then direction of field lines will be anticlockwise. (Credit full marks if direction of current and field lines are marked in the diagram)	1 1 ½ + ½ 1 ½ ½	4

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