Strictly Confidential: (For Internal and Restricted use only)
Class : X Secondary School Term II Examination, 2022
Marking Scheme – Science SUBJECT CODE -086
(PAPER CODE –31/3/2)

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 **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.

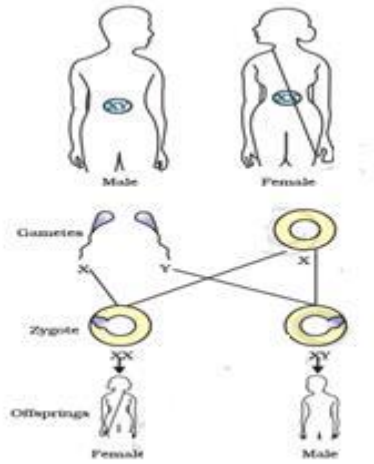
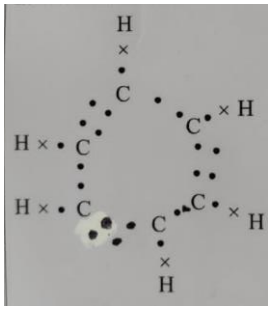
MARKING SCHEME
SECONDARY SCHOOL EXAMINATION TERM–II, 2022
SUBJECT : SCIENCE CODE–086
[PAPER CODE: 31/3/2]

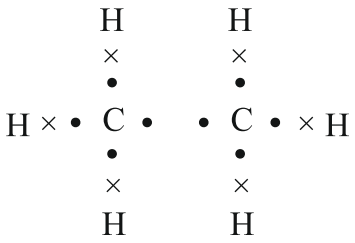
Instructions:-

- **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.**

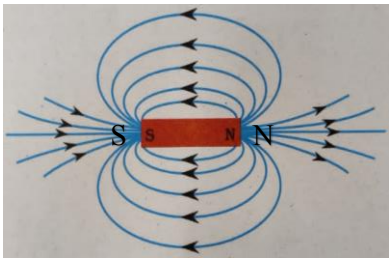
Maximum Marks: 40

Q. No.	EXPECTED ANSWER / VALUE POINTS	Marks	Total Marks
	SECTION—A		
1.	(a) Urethra (b) Testis (c) Vas deferens (d) Seminal vesicle/Prostate gland	½ × 4 =2	2
2.	(a) • No halfway characteristics were found in the F_1 generation because the F_1 progeny is a mixture of contrasting traits of the parents but only one of the character of the parents gets expressed in F_1 progeny. • The character that gets expressed is a dominant trait and that which does not get expressed in the presence of dominant trait is a recessive trait.	1 1	
	OR		
2.	(b) Mother has XX chromosome. Father has XY chromosome. All children inherit X chromosome from mother. The one who inherits X chromosome from father will be a girl and one who inherits Y chromosome from the father will be a boy. /	½ ½ 1	

	 **(full credit for diagrammatic expression)**		2
3.	• Barrier method : Prevents the meeting of sperms with ova • Oral pills/Chemical method : Changes the hormonal balance in females so eggs are not released • Copper T or loop : to prevent pregnancy/to prevent fusion of male & female gametes • Surgical method : To block vas deferens in males or fallopian tube in females to prevent fertilization **(Any two)**	1+1	2
4.	• Electronic configuration of X : 2, 8, 8, 6 • Valency = 2 • Group of X= 6 • Period of X=4	½ ½ ½ ½	2
5.	(a) Electron dot structure of benzene 	1	

	(b) Electron dot structure of ethane 	1	2
6.	(a) • Disposable paper cups. • Making of Kulhads on a large scale would result in the loss of fertile top soil. /Disposable paper cups can easily decompose and do not pollute the environment. **(or any other suitable answer)** **OR**	1 1	
6.	(b) • Human beings occupy the top level in any food chain therefore maximum concentration of these chemicals get accumulated in our bodies. • Harmful chemicals or pesticides get absorbed from the soil by the plants along with water and minerals therefore ordinary washing cannot remove these harmful chemicals.	1 1	2
7.	(a) P (Power) = V (Potential difference) × I (Current) Here P = 1100 W, V = 220 V, I = ?, R = ? $P = \frac{V^2}{R}$ (i) $R = \frac{V^2}{P}$ $= \frac{220\ \text{V} \times 220\ \text{V}}{1100\ \text{W}}$ $= 44\ \Omega$ (ii) $I = \frac{V}{R}$ $I\ (\text{Current}) = \frac{V}{R} = \frac{220\ \text{V}}{44\ \Omega} = 5\ \text{A}$ **(Accept any other alternative method)** **OR**	½ ½ ½ ½	

	(b) $R_S = R_3 + R_4 = 10 + 10 = 20\ \Omega$ $\frac{1}{R_P} = \frac{1}{R_2} + \frac{1}{R_S}$ $= \frac{1}{20} + \frac{1}{20} = \frac{1}{10}\ \Omega$ $R_P = 10\ \Omega$ Total equivalent resistance = $R = R_1 + R_P + R_5$ $= R = 20 + 10 + 10 = 40\ \Omega$	½ ½ ½ ½	2
	SECTION—B		
8.	• Mendel crossed two pea plants with two different visible contrasting characteristics such as plant with round and green seeds, with plant with wrinkled, yellow seeds. In F_1 progeny all obtained plants have round and yellow seeds which are dominant characters. • F_1 progeny is self-pollinated to produce F_2 progeny and the plant produced in F_2 progeny showed new combination such as plant with round and yellow seeds or plant with wrinkled and green seeds which were not present in parent generation or F_1 progeny. The ratio obtained was 9 round yellow,3 round green, 3 wrinkled yellow, 1 wrinkled green. Thus, traits are independently inherited. **(Full marks should be given if diagrammatically represented)**	1 1 1	3
9.	(a) (i) • When the key is plugged-in, current starts in coil-1, the magnetic field around the coil is changed. This produces induced current in the coil – 2 and galvanometer shows deflection • There is no change in magnetic field when a steady current starts flowing in the circuit. (ii) Galvanometer shows deflection in the opposite direction. (iii) Conclusion: Induced current is produced only when there is a change in magnetic field which occurs only when the key is plugged in or plugged out. **OR**	1 1 1	
9.	(b) (i) Arm *AB*—Downward, Arm *CD*—Upward (ii) P and Q—Split ring / Commutator	½+½ ½, ½	

	(iii) Arm *AB* upward, Arm *CD* downward/Direction of force will get Reversed (iv) Fleming's left-hand rule	½ ½	3
10.	(a) • Field lines around a bar magnet.  • Position of North pole, South pole- to be marked in the diagram • Field is strongest where lines are crowded / at Poles / or indicated in the diagram. (b) If two field lines cross each other then at the point of intersection, the compass needle would point towards two directions which is not possible.	1 ½ ½ 1	3
11.	• Newland's Law of Octaves • Important features : 1. The elements were arranged in the order of their increasing atomic mass. 2. Every eighth element has properties similar to the first element. • Anomalies : 1. It was assumed that only 56 elements existed in nature and new elements would not be discovered in future. 2. Unlike elements were put in the same slot/note. **(Or any other)**	1 ½ ½ ½ ½	3
12.	(a) (i) The forces of attraction between the molecules are weak. (ii) Bonding in carbon compounds does not give rise to any charged particles. (iii) Carbon only shares electrons with other atoms. It is not able to lose four electrons or gain four electrons. **OR**	1 1 1	
12.	(b) • A series of compounds in which some functional groups substitute for hydrogen in a carbon chain / the consequent members differ by -CH_2 unit (14 u) • Difference of $CH_2 = 12u + 2u = 14u$ (i) Melting and boiling points increase with increase in molecular mass. (ii) Chemical properties, determined by the functional group remain same in a homologous series.	1 1 ½ ½	3

13.	(a) Since the 10% energy is available from lower trophic level to higher trophic level therefore the number of individuals decreases. (b) The energy captured by the autotrophs cannot revert back to the solar input / energy once received by herbivores cannot come back to autotrophs **Note: similar explanation using any two trophic levels .**	1½ 1½	3
	SECTION—C		
14.	(a) Since most organisms would not normally depend on being cut up to be able to reproduce. (b) •Plants can bear fruits and flowers much earlier than produced by sexual reproduction •Plants produced are genetically similar to the parent plant **(Or any other)** (c) (i) Bud develops as an outgrowth due to repeated cell division at one specific site, these buds develop into tiny individuals, and when fully mature detach from the parent body and become new independent individuals. **(Marks should be awarded if a student draws a well labelled diagram)** **OR** (c) (ii) (I) The filament breaks into smaller pieces or fragments and each fragment grows into new individuals. (II) It releases spores which germinate and eventually develops into new Rhizopus individuals.	1 ½ + ½ 2 1 1	4
15.	(a) $R = R_1 + R_2 + R_3$ $= 5\Omega + 10\Omega + 15\Omega$ $= 30\Omega$ (b) $\frac{1}{Rp} = \frac{1}{R_B} + \frac{1}{R_C}$ $\frac{1}{Rp} = \frac{1}{30\Omega} + \frac{1}{60\Omega}$ $R_p = 20\ \Omega$ (c) (i) $R = R_s + R_p$ $= 40\ \Omega + 20\ \Omega = 60\Omega$ $\therefore I = \frac{V}{R} = \frac{6V}{60\Omega} = \frac{1}{10}\ A = 0.1\ A$	1 ½ ½ 1 ½ + ½	

	OR (c) (ii) $Resistance\ , R = 40\Omega\ + 60\Omega = 100\Omega$ $\therefore I = \frac{V}{R} = \frac{6V}{100\Omega} = 0.06\ A$	1 ½ + ½	4

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