Marking Scheme

Strictly Confidential

(For Internal and Restricted use only)

Secondary School Certificate Examination, 2025

SUBJECT NAME: SCIENCE (Q.P. CODE 31/6/1)

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 Newspaper/Website, etc. may invite action under various rules of the Board and 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 due 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, due marks should be awarded.**
4	The Marking scheme carries only suggested value points for the answers These are in the nature of Guidelines only and do not constitute the complete answer. The students can have their own expression and if the expression is correct, the due marks should be awarded accordingly.
5	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. If there is any variation, the same should be zero after deliberation and discussion. 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.
6	Evaluators will mark(√) wherever answer is correct. For wrong answer CROSS 'X' be marked. Evaluators will not put right (✓)while evaluating which gives an impression that answer is correct and no marks are awarded. **This is most common mistake which evaluators are committing.**
7	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.
8	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.
9	If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out with a note **"Extra Question"**.
10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.

11	A full scale of marks 80 (example 0 to 80/70/60/50/40/30 marks as given in Question Paper) has to be used. Please do not hesitate to award full marks if the answer deserves it.
12	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). This is in view of the reduced syllabus and number of questions in question paper.
13	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 an answer. ● 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/not same. ● 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.
14	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.
15	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.
16	The Examiners should acquaint themselves with the guidelines given in the "**Guidelines for Spot Evaluation**" before starting the actual evaluation.
17	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.
18	The candidates are entitled to obtain photocopy of the Answer Book on request on payment of the prescribed processing fee. All Examiners/Additional Head Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking Scheme.

SECONDARY SCHOOL EXAMINATION, 2025

MARKING SCHEME

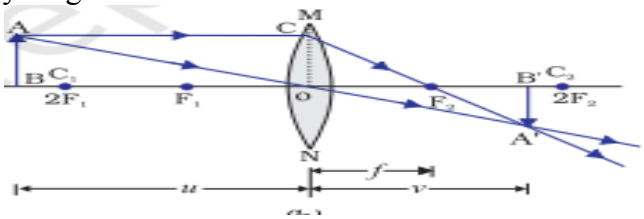
CLASS: X SCIENCE (Subject Code–086)

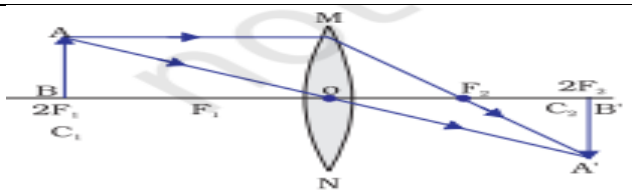
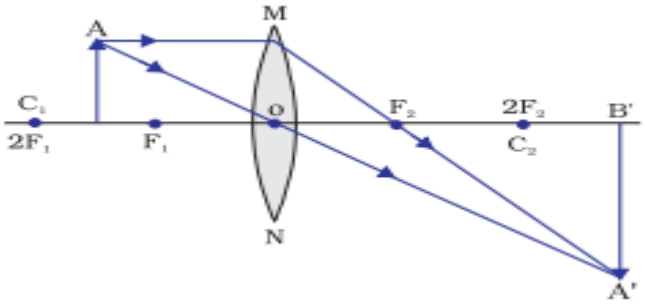
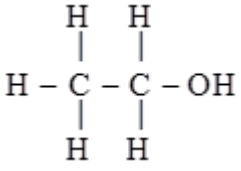
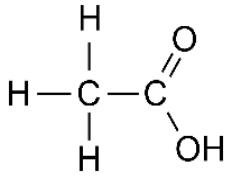
[Paper Code: 31/6/1]

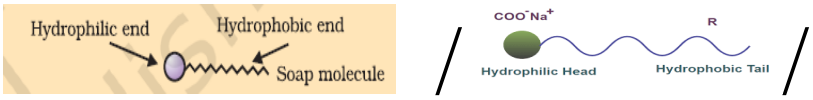
Maximum Marks: 80

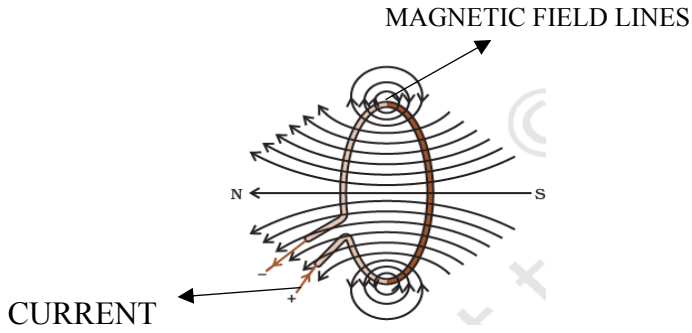
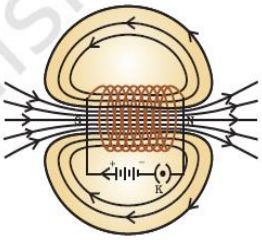
Q. No.	EXPECTED ANSWERS / VALUE POINTS	Marks	Total Marks
	SECTION A		
1	(C)/(i) and (iii)	1	1
2	(D) / B < A < C	1	1
3	(C) / It is an endothermic reaction	1	1
4	(C)/ C_7H_{14}	1	1
5	(B) / Pale green	1	1
6	(D) / Tartaric acid	1	1
7	(B) / (ii) and (iii)	1	1
8	(D) / 100% tall with round seeds	1	1
9	(D) / Hypothalamus and Pineal	1	1
10	(C) / P – 3, Q – 4, R – 1, S – 2	1	1
11	(A) / Nephron	1	1
12	(B) / Hydrochloric acid, Pepsin and Mucus	1	1
13	(C)	1	1
14	(D) Pupil	1	1
15	(D) / 5000 kJ	1	1
16	(C) / It is used as a refrigerant and in fire-extinguishers	1	1
17	(A) / Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).	1	1
18	(C) / Assertion (A) is true, but Reason (R) is false.	1	1
19	(A) / Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).	1	1
20	(C) / Assertion (A) is true, but Reason (R) is false.	1	1
	SECTION B		
21	• P – Fe • Q – Zn / Mg • Chemical reaction: $FeSO_4 + Zn \longrightarrow ZnSO_4 + Fe$ / $FeSO_4 + Mg \rightarrow MgSO_4 + Fe$ • More reactive metal will displace less reactive metal from its salt solution**.** / Zn or Mg are more reactive than Fe.	½ ½ ½ ½	2
22	(a) Brain is protected in bony box / skull / cranium / fluid filled balloon. (b) Region of brain: Hind brain and its part is cerebellum.	1 ½ + ½	2
23	(a)The height of plant depends upon amount of particular plant hormone. This hormone depends upon the efficiency of enzyme (protein) which depends upon a DNA sequence (gene). If the enzyme works efficiently, lot of hormones are made and the plant will be tall. **OR**	2	

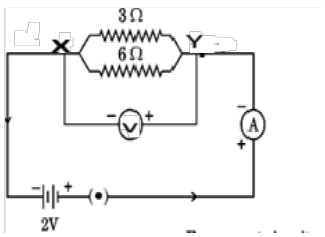
	(b)Each cell has two copies of each chromosome, one each from male and female parents. During gamete formation, the gamete takes one chromosome from each pair. When two such gametes having a single set of genes combine together, they restore the normal number of chromosomes in the progeny ensuring the stability of DNA of the species. **(Any other explanation)**	2	2
24	(a) Medium 2 (b)Ray bends away from the normal because it is travelling from optically denser medium to rarer medium / speed of light in medium 2 increases. (c) $n_{21} = \frac{\text{Speed of light in medium 1}}{\text{Speed of light in medium 2}}$	½ ½ 1	2
25	(a) (i) Scattering of light is not prominent at such heights. (ii) The red colour is least scattered by smoke or fog. / Red colour has longer wavelength. **OR** (b) • Rainbow is a natural spectrum appearing in the sky after a rain shower. • After rain, small water droplets act as a tiny prism, when light enters, it gets refracted and dispersed.	1 1 1 1	2
26	Ponds or lakes have natural cleansing agents like microbes which clean the ponds or lakes. whereas an aquarium or a swimming pool is an artificial/man-made ecosystem and do not have decomposers. If we do not clean the aquarium regularly the waste material will go on increasing which is harmful for fishes and aquatic plants.	1 1	2
	SECTION C		
27	(a) $3Fe + 4H_2O \rightarrow Fe_3O_4 + 4H_2$ (b) $CH_4 + 2O_2 \longrightarrow CO_2 + 2H_2O$ (c) $C_6H_{12}O_6 + 6O_2 \longrightarrow 6CO_2 + 6H_2O + E$nergy	1 1 1	3
28	(a) (i) Baking soda is used as an antacid because it is a mild non-corrosive basic salt hence neutralises excess acid. (ii) Baking soda liberates carbon dioxide (CO_2) gas on reaction with mild edible acid. (iii)In fire extinguishers, it acts as a base to react with acid to produce carbon dioxide (CO_2) gas to extinguish fire. **OR** (b) (i) $Zn + 2HCl \longrightarrow ZnCl_2 + H_2$ Metal Acid Zinc chloride	1 1 1 1	

	(ii) $2NaOH + H_2SO_4 \longrightarrow Na_2SO_4 + 2H_2O$ Base Acid Sodium Sulphate (iii) $Na_2CO_3 + 2HCl \longrightarrow 2NaCl + H_2O + CO_2$ Salt Acid Sodium chloride **(Any other relevant equation in all three)** **(Give marks if written with carbonate ion)**	1 1 1	3
29	(i) Pulmonary vein (ii) Vena cava • Right atrium • After receiving blood, the right atrium contracts • As a result blood passes into the right ventricle • Then the ventricle contracts and the deoxygenated blood flows into the lungs through pulmonary artery.	½ ½ ½ ½ x 3	3
30	(a) All plants were purple flowered/ No mixed coloured flowers were observed / No white flowered plants were observed / Only dominant parental trait was observed. **(Any two observations)** (b) (i) 25% (ii) 1 : 2 : 1 /1WW:2Ww:1ww (c) Dominant Trait: A trait that can express itself in the presence of its unexpressed contrasting trait / Trait express itself always Recessive Trait: A trait that remains unexpressed in the presence of its contrasting form. **(Any other difference)**	½ x2 ½ ½ 1	3
31	(a) Focal length = + 15 cm **(Ignore units)** Reason: when object distance and image distance are same i.e. object is at 2F, image is also formed at 2F on the other side ∴ 2f = 30 cm (b) Observation No. 8 Reason: here the object is between optical centre and principal focus of the lens hence image is formed on the same side as the object and v is not equal to + 120 cm. (it should be -120 cm) (c) Ray diagram  	½ ½ ½ ½	

	  **Any one ray diagram**	1	3
32	(a) Hypermetropia (b) Two causes: • Eye ball has become too small /Eye ball is shortened • The focal length of the eye Lens is long / eye lens becomes less convergent (c) Focal length $= \frac{1}{P}$ $= \frac{1}{2}$ $= +0.5$ m	1 ½ x2 ½ ½	3
33	(a) It means 1 joule of work is done to move a charge of 1 coulomb from one point of the conductor to the other. (b) (i) • Ammeter. • Ammeter is used to measure electric current (ii) • Rheostat or variable resistance • Rheostat is used in a circuit to vary the resistance of the circuit	1 ½ ½ ½ ½	3
	SECTION D		
34	(a) • Ethanol and Ethanoic acid  / CH_3CH_2OH,  / CH_3COOH • On adding alkaline $KMnO_4$ /acidified $K_2Cr_2O_7$ to alcohol, it gets oxidised to Carboxylic acid. • An Ester is formed	½ +½ ½ ½ ½ ½	

	$C_2H_5OH \xrightarrow[\text{heat}]{\text{Alkaline } KMnO_4} CH_3COOH$	1	
	$C_2H_5OH + CH_3COOH \xrightarrow[\text{Catalyst}]{\text{Acid}} CH_3COOC_2H_5 + H_2O$	1	
	OR		
	(b) • Soaps are sodium or potassium salts of long chain carboxylic acids.	1	
	• 	1	
	soap molecule consists of a hydrophobic(water repelling)end and a hydrophilic (water loving)end.		
	• Most dirt is oily in nature, oil does not dissolve in water. The ionic-end (hydrophilic) of soap interacts with water while the carbon chain(hydrophobic) interacts with oil. The soap molecules react with dirt, thus form structures called micelles. This forms an emulsion in water. The soap micelle thus helps in pulling out the dirt in water and we can wash our clothes clean	1	
	• Hard water contains salts of Ca and Mg, which reacts with soap to form scum (an insoluble substance) and no foam is formed	1	
	• we can overcome this problem by using detergents as cleaning agents. / By removing hardness of water.	1	5
35	(a) When the rate of general body growth begins to slow down and reproduction tissues begin to mature – This period of adolescence is called puberty.	1	
	• Changes in boys: Cracking of voice/Thick hair growth on face / Penis occasionally begins to become enlarge and erect /Thick hair growing in the genital area or arm pits. **(Any two)**	½ x2	
	(b)As sperm formation requires a temperature which is lower than normal body temperature, that is why testes are located outside the abdominal cavity in scortum.	1	
	(c) Three techniques of contraception:		
	• Mechanical barrier /Condom • Chemical method /Oral pills • Loop or copper T inside uterus • Surgical methods /Blockage of Vas deferens or fallopian tube **(Any three)**	½ x 3	
	• Not meant for males: Oral pills / Loop or Copper T	½	
	(a) **OR**		
	(i) Ovary		

	(ii) Oviduct / fallopian tube (iii)Uterus (iv)Vagina / Vaginal passage (b) (i) • Zygote starts dividing in the uterus. • Thickened Uterine lining which is richly supplied with blood vessels nourishes the developing embryo. • Placenta develops, which provides oxygen, food to the embryo and removes waste substances. (ii)The uterine lining slowly breaks down and comes out as blood and mucous along with unfertilised egg.	½ x 4 ½ ½ ½ 1 ½	5
36	(a) Magnetic field lines are the imaginary lines around the magnet •Magnetic field line directions at a point are determined by placing a small compass needle. •Figure of magnetic field produced by a current carrying circular coil –  **(1 Mark for each labelling)** • Amount of the electric current flowing through it. • The number of turns in the circular coil • The radius of circular coil **(Any two)** **OR** (b) • There will be two directions of the field at the same point i.e. the point where the two field lines intersect which is not possible. / At the point of intersection, the compass needle would point towards two directions, which is not possible.  •Magnetic field lines are equidistant and parallel i.e. the magnetic field is the same at all points inside the solenoid. • Number of turns	½ ½ 2 2 1 1 1	

	• Amount of current in solenoid, • Core material inside the solenoid **(Any two)**	1x2	5
	SECTION E		
37	(I) Both electrical conductivity and melting point of an alloy becomes less than that of a pure metal. (Although in some cases the melting point may increases) (II) • Solder • Lead (Pb) & tin (Sn) (III) (a) • An alloy is a homogenous mixture of two or more metals or a metal and a nonmetal. • Brass is an alloy is prepared by mixing Copper and Zinc in definite proportion. **OR** (III) (b) • Stainless steel is an alloy of steel (iron) mixed with nickel and chromium. • Iron is first mixed with small amount of carbon (0·05%) so that it becomes hard and strong when, then it is mixed with Ni and Cr metals, stainless steel is formed. • Do not rust **(or any other property)**	1 ½ ½ 1 1 1 ½ ½	4
38	(I)'X' – Positive geotropism/ Negative Phototropism 'Y' – Negative geotropism / Positive Phototropism (II) (i) Abscisic acid (ii) Cytokinin (III) (a) • The plants use electrical- chemical means to convey information (touch) from cell to cell. • Plant cells change shape by changing the amount of water in them, resulting in swelling /shrinking of cells. **OR** (III) (b) • Auxin • When light is coming from one side of the plant, auxin diffuses towards the shady side of the shoots. This concentration of Auxin stimulates the cells to grow longer, on the side of the shoot which is away from light. Thus the plant appears to bend towards light.	½ ½ ½ ½ 1 1 1 1 1	4
39	(I)  **(or Any other way)** (II) (i) in parallel combination.	1 ½	

	(ii) in series combination.	½	
	(III) (a) Resistance R = 3 Ω + 6 Ω = 9 Ω	1	
	V = 2V		
	$I = \frac{V}{R} = \frac{2\ V}{9\ \Omega} = 0{\cdot}22\ A$	1	
	OR		
	(b) $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R}$	½	
	$= \frac{1}{3\ \Omega} + \frac{1}{6\ \Omega}$	½	
	$= \frac{6+3}{18\ \Omega}$		
	$\therefore$ R = 2ohm	1	4