

Marking Scheme
Strictly Confidential
(For Internal and Restricted use only)
Secondary School Examination, 2026 (Xth)
SUBJECT NAME SCIENCE (Q.P. CODE /Set No 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 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 totaled 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	<p>Ensure that you do not make the following common types of errors committed by the Examiner in the past :-</p> <ul style="list-style-type: none"> • 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.) <p>Half or a part of answer marked correct and the rest as wrong, but no marks awarded.</p>
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.

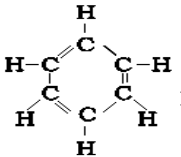
(PAPER CODE: 31/2/1) (10-02-86K)

PAGE 3 {31/2/1}

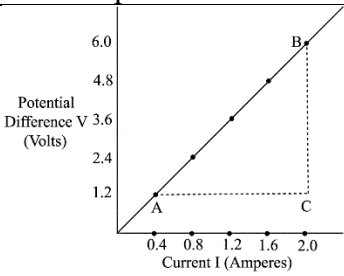
12.	(i) Composting (ii) recycle/reuse (iii) recycle/reuse (iv) Incineration (or any other relevant answer)	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	2						
13.	A: Cytoplasm B: Ethanol C: Carbon dioxide / D: Lactic acid E: Carbon dioxide F: Water A: Cytoplasm B: Carbon dioxide C: Ethanol D: Lactic acid E: Water F: Carbon dioxide	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	3						
14.	(a) <ul style="list-style-type: none">In a few reptiles, the temperature at which fertilised eggs are kept determine whether the animal developing from the eggs will be male or female.In snails, individuals can change sex. (or any other suitable example) (b) <table><tr><th>Male sex chromosome</th><th>Female sex chromosome</th></tr><tr><td>Male has a mismatched pair i.e, 'XY' chromosomes.</td><td>Female has a perfect pair i.e. 'XX' chromosomes.</td></tr><tr><td>Y chromosome is smaller than X chromosome.</td><td>Both X chromosomes are of same size.</td></tr></table> (Any one difference, Any other difference)	Male sex chromosome	Female sex chromosome	Male has a mismatched pair i.e, 'XY' chromosomes.	Female has a perfect pair i.e. 'XX' chromosomes.	Y chromosome is smaller than X chromosome.	Both X chromosomes are of same size.	1 1 1	3
Male sex chromosome	Female sex chromosome								
Male has a mismatched pair i.e, 'XY' chromosomes.	Female has a perfect pair i.e. 'XX' chromosomes.								
Y chromosome is smaller than X chromosome.	Both X chromosomes are of same size.								
15.	(a) Actions which are controlled by forebrain / Actions which are under our control and are performed according to our will. (b) Cerebellum. (c) (i) Regulates involuntary functions like heart rate/ blood pressure/ breathing / sneezing/ vomiting. OR (c) (ii) Animal muscles are made up of special proteins, that change both shape and arrangement in response to nervous electrical impulses, new arrangements of these proteins give the muscle cells a shorter form so, muscle cells move which help animals to move.	1 1 2 2	4						
16.	(a) (i) <ul style="list-style-type: none">Organ - TestesConditions - Requires a lower temperature than the normal body temperature/Secretion of testosterone.	1 1							

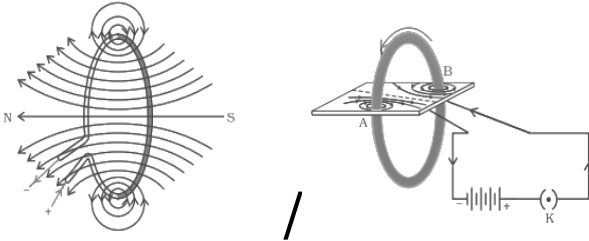
	<p>(ii) The sperms formed in the testes are carried by Vas deferens and delivered to urethra (Common passage for both sperms and urine). / Testes → Vas deferens → Urethra</p> <p>(iii) Long tail of sperms.</p> <p style="text-align: center;">OR</p> <p>(b)</p> <p>(i)</p> <ul style="list-style-type: none"> Mechanical barrier / Female condom (Diaphragm)/ similar covering worn in vagina Oral contraceptives/ Oral pills Copper - T / loops. <p style="text-align: right;">(any two methods, any other method)</p> <p>(ii) Surgical methods</p> <ul style="list-style-type: none"> Vas deferens in the male is blocked / Vasectomy Fallopian tube in the female is blocked /Tubectomy <p>(iii)</p> <ul style="list-style-type: none"> Bacteria - Gonorrhoea / Syphilis (any other example) Virus - Warts / AIDS (any other example) 	2		
		1		
		2		
		2		
		½	½	5
SECTION – B				
Chemistry				
17.	(D) / (ii)and (iii)	1	1	
18.	(C) / X-Hydrochloric acid, Y-Carbon dioxide	1	1	
19.	(C) / The green colour of the salt fades and a gas with the smell of burning sulphur is evolved.	1	1	
20.	(B) / Mg reacts with water to produce H ₂ gas which helps in floating.	1	1	
21.	(A) / Less than 7	1	1	
22.	(C) / Sodium hydrogen carbonate +Tartaric acid	1	1	
23.	(B) / The jewellery comes in contact with air, moisture and acids and corrodes.	1	1	
24.	(A) / Both A and R are true and R is the correct explanation of A.	1	1	
25.	<p>(i)</p> <ul style="list-style-type: none"> Test tube B Iron is more reactive than copper, so iron can displace copper from copper sulphate solution. <p>(ii) $\text{Fe(s)} + \text{CuSO}_4 \text{(aq)} \rightarrow \text{FeSO}_4 \text{(aq)} + \text{Cu(s)}$</p>	½ ½ 1		2

26.	<p>(a) (i)</p> <ul style="list-style-type: none"> Lithium (Li) / Sodium (Na) / Potassium (K) (anyone) Graphite <p>(ii)</p> $\begin{array}{ccc} \text{Mg} & \longrightarrow & \text{Mg}^{2+} + 2e^- \\ [2, 8, 2] & & [2, 8] \end{array}$ $\begin{array}{ccc} \text{O} & + 2e^- \longrightarrow & \text{O}^{2-} \\ [2, 6] & & [2, 8] \end{array}$ $\text{Mg} \cdot + \cdot \ddot{\text{O}} \cdot \longrightarrow [\text{Mg}^{2+}] [\text{O}^{2-}]$ <p style="text-align: center;">OR</p> <p>(b)(i) It is easier to obtain metal from its metal oxide / It is easier to reduce metal oxide to metal.</p> <p>(ii) Aluminium oxide can react with both acids as well as bases to form salt and water.</p> <p style="text-align: center;">/</p> $\text{Al}_2\text{O}_3 + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2\text{O}$ $\text{Al}_2\text{O}_3 + 2\text{NaOH} \rightarrow 2\text{NaAlO}_2 + \text{H}_2\text{O}$ <p>(iii) As they are highly reactive metals so exist in combined state.</p>	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>3</p>
27.	<ul style="list-style-type: none"> Colour of copper powder changes from brown to black. On passing H_2 gas, the colour turns brown. $2\text{Cu} + \text{O}_2 \xrightarrow{\text{heat}} 2\text{CuO}$ <p style="text-align: center;">copper oxide (Black)</p> $\text{CuO} + \text{H}_2 \xrightarrow{\text{heat}} \text{Cu} + \text{H}_2\text{O}$ <p style="text-align: center;">copper (Brown)</p> <p>(Award $\frac{1}{2}$ mark for equation and $\frac{1}{2}$ mark for name and colour in each case.)</p>	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2} + \frac{1}{2}$</p> <p>$\frac{1}{2} + \frac{1}{2}$</p>	<p>3</p>
28.	<p>(a) X - Chlorine gas Y -Hydrogen gas</p> <p>(b)</p> $2\text{NaCl}(\text{aq}) + 2\text{H}_2\text{O}(\text{l}) \rightarrow 2\text{NaOH}(\text{aq}) + \text{Cl}_2(\text{g}) + \text{H}_2(\text{g})$ <p style="text-align: center;">(Deduct $\frac{1}{2}$ marks for no/incorrect balancing)</p> <p>(c) (i)</p> <p>(I) The red litmus solution will turn blue.</p> <p>(II) Sodium hydrogen carbonate and Ammonium chloride will be formed / NaHCO_3 and NH_4Cl will be formed. /</p> $\text{NaCl} + \text{H}_2\text{O} + \text{CO}_2 + \text{NH}_3 \rightarrow \text{NH}_4\text{Cl} + \text{NaHCO}_3$ <p style="text-align: center;">(Ammonium chloride) (Sodium hydrogencarbonate)</p>	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>1</p> <p>1</p> <p>1</p>	

	<p style="text-align: center;">OR</p> <p>(c) (ii)</p> <ul style="list-style-type: none"> Bleaching Powder / CaOCl_2 / $\text{Ca}(\text{ClO})_2$ $\text{Ca}(\text{OH})_2 + \text{Cl}_2 \rightarrow \text{CaOCl}_2 + \text{H}_2\text{O}$ / $2\text{Ca}(\text{OH})_2 + 2\text{Cl}_2 \rightarrow \text{Ca}(\text{ClO})_2 + \text{CaCl}_2 + \text{H}_2\text{O}$ (Deduct $\frac{1}{2}$ mark for no/incorrect balancing) 	<p>1</p> <p>1</p>	4
29.	<p>(a)</p> <p>(i) P- Ethanol / $\text{C}_2\text{H}_5\text{OH}$ / $\text{CH}_3\text{CH}_2\text{OH}$</p> <p>(ii)</p> <p>(I)</p> $\text{CH}_3 - \text{CH}_2\text{OH} \xrightarrow[\text{H}_2\text{SO}_4]{\text{Hot Conc.}} \text{CH}_2 = \text{CH}_2 + \text{H}_2\text{O}$ <p>(II) Dehydrating agent / Catalyst</p> <p>(iii)</p> <ul style="list-style-type: none"> Sweet smelling compound/ester is formed. $\text{CH}_3 - \text{COOH} + \text{CH}_3 - \text{CH}_2\text{OH} \xrightleftharpoons{\text{Acid}} \text{CH}_3 - \underset{\text{O}}{\underset{\parallel}{\text{C}}} - \text{O} - \text{CH}_2 - \text{CH}_3 + \text{H}_2\text{O}$ <p style="text-align: center;">OR</p> <p>(b) (i)  (any other resonating structure)</p> <p>(ii) Carbon cannot form C^{4+} cation because removal of four electrons is energetically not possible. Carbon cannot form C^{4-} anion because nucleus with six protons cannot hold ten electrons.</p> <p>(iii) Covalent bond</p> <p>(iv)</p> $\text{CH}_3 - \text{CH}_2\text{OH} \xrightarrow[\text{Or acidified K}_2\text{Cr}_2\text{O}_7 + \text{Heat}]{\text{Alkaline KMnO}_4 + \text{Heat}} \text{CH}_3\text{COOH}$ <p style="text-align: center;">/</p> <p>Ethanol is converted to Ethanoic Acid by adding Alkaline KMnO_4/Acidified $\text{K}_2\text{Cr}_2\text{O}_7$ as oxidising agent.</p> <p>(v)</p> $\text{CH}_3\text{COOC}_2\text{H}_5 \xrightarrow{\text{NaOH}} \text{C}_2\text{H}_5\text{OH} + \text{CH}_3\text{COONa}$	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	5
	SECTION – C PHYSICS		

30.	(A) / Concave mirror, Nature of image-real	1	1
31.	(B) / Red, Yellow, Green, Blue, Violet	1	1
32.	(C) / Assertion (A) is true, but reason (R) is false.	1	1
33.	<p style="text-align: center;">Medium 1 Medium 2</p> $\frac{\sin i}{\sin r} = n$ $\angle i = 90^\circ - 30^\circ = 60^\circ$ $\frac{\sin 60^\circ}{\sin 30^\circ} = n$ $n = \frac{\sqrt{3}}{\frac{1}{2}}$ $n = \sqrt{3}$	<div style="text-align: right;">$\frac{1}{2}$</div> <div style="text-align: right; margin-top: 100px;">1</div> <div style="text-align: right; margin-top: 100px;">$\frac{1}{2}$</div>	2
34.	(a) <ul style="list-style-type: none"> If the distance of the object from the eye is increased, ciliary muscles relax, lens becomes thin and so the focal length increases. If the distance between the object from the eye is decreased, the ciliary muscles contract, lens becomes thick and the focal length decreases. <p style="text-align: center;">OR</p> (b) In myopic eye image is formed in front of the retina. A concave lens / diverging lens of suitable power will bring the image back on to the retina.	<div style="text-align: right;">1</div> <div style="text-align: right; margin-top: 100px;">1</div> <div style="text-align: right; margin-top: 100px;">2</div>	2
35.	(a) Magnification, $m = \frac{\text{Image distance}}{\text{Object distance}} / m = \frac{v}{u}$ (b) $h_o = +4 \text{ cm}$ $f = +20 \text{ cm}$ $u = -10 \text{ cm}$ $h_i = ?$ $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$ $\frac{1}{v} = \frac{1}{f} + \frac{1}{u}$ $\frac{1}{v} = \frac{1}{20} + \frac{1}{-10}$ $\frac{1}{v} = \frac{-1}{20}$ $v = -20 \text{ cm}$	<div style="text-align: right;">1</div> <div style="text-align: right; margin-top: 100px;">$\frac{1}{2}$</div> <div style="text-align: right; margin-top: 100px;">$\frac{1}{2}$</div>	

	$m = \frac{v}{u}$ $m = \frac{-20}{-10}$ $m = 2$ $m = \frac{\text{height of image}}{\text{height of object}}$ <p>height of image = $m \times$ height of object height of image = $2 \times 4 \text{ cm} = 8 \text{ cm}$</p>	1	3
36.	<ul style="list-style-type: none"> The phenomenon of spreading light in different directions on interaction with particles of the medium. Light bounces back in a fixed direction after reflection while in scattering of light, it spreads in different directions. / Reflection of light is independent of the size of reflecting particles whereas the colour of the scattered light depends upon the size of scattering particles. 	1 2	3
37.	 <p>Resistance = Slope of V – I graph</p> $R = \frac{BC}{AC}$ $R = \frac{6.0 - 1.2}{2.0 - 0.4}$ $R = 3 \Omega$	2 $\frac{1}{2}$ $\frac{1}{2}$	3
38.	<p>(a) A part of current is consumed into useful work and rest is expended in heat to raise the temperature of gadget. (any other suitable explanation)</p> <p>(b)</p> $W = V \times Q = VIt = IR \times It$ $H = I^2 R t \quad / \quad \frac{V^2}{R} t$ <p>(c) (i) Electric heater, Oven, Electric iron (Any two, Any other) OR</p> <p>(c) (ii) When 1 kilowatt of power is used for 1 hour then energy consumed is 1 kWh $1 \text{ kWh} = 3.6 \times 10^6 \text{ J}$</p>	1 1 1+1 1 1	4
39.	<p>(a) (i) Stretch the thumb, fore finger and middle finger of your left hand such that they are mutually perpendicular. If the first finger (forefinger) points in the direction of the magnetic field and the middle finger (second finger) in the direction of the current, then the thumb will point in the direction of motion or the force acting on the conductor.</p> <p>(ii)</p>	1	

	<ul style="list-style-type: none"> • A fuse is a safety device in electric circuit designed to protect against overloading. • Because it prevents damage to the circuit and appliance. <p>(iii) Three pin plug connects the metallic body of an appliance with the earth wire which provides a low resistance path for electric current to flow to the ground and hence prevents us from electric shock. The bulb with a non metallic body does not require earthing and so is connected to a two pin plug.</p> <p>(iv)</p> <ul style="list-style-type: none"> • Into the page. • Fleming's Left-hand rule <p style="text-align: center;">OR</p> <p>(b) (i)</p> <div style="text-align: center;">  </div> <p style="text-align: right;">Any one diagram</p> <p style="text-align: center;">Direction of magnetic field lines and current</p> <p>(ii) Imagine that you are holding a current carrying straight conductor in your right hand such that the thumb points towards the direction of current. Then your fingers will wrap around the conductor in the direction of the field lines of the magnetic field.</p> <p>(iii)</p> <p>(I) If a fuse of higher rating is used it will not be able to prevent the damage due to overloading. / If a fuse of lower rating is used, it will melt and the appliance will not work.</p> <p>(II) Soft iron core can be easily magnetised when current flows through the solenoid and gets demagnetised quickly when current stops flowing.</p>	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>5</p>	
--	--	---	--

Marking Scheme
Strictly Confidential
(For Internal and Restricted use only)
Secondary School Examination, 2026 (Xth)
SUBJECT NAME SCIENCE (Q.P. CODE /Set No 31/2/2)

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 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 totaled 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.

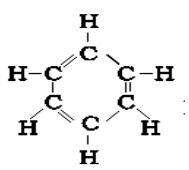
9	If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out with a note “Extra Question” .
10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
11	A full scale of marks 80 (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	<p>Ensure that you do not make the following common types of errors committed by the Examiner in the past :-</p> <ul style="list-style-type: none"> • 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.) <p>Half or a part of answer marked correct and the rest as wrong, but no marks awarded.</p>
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.

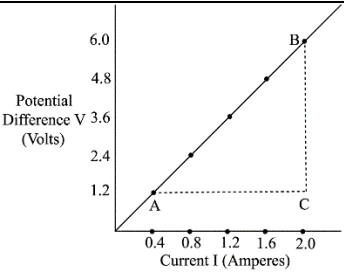
(PAPER CODE: 31/2/2) (10-02-86K)

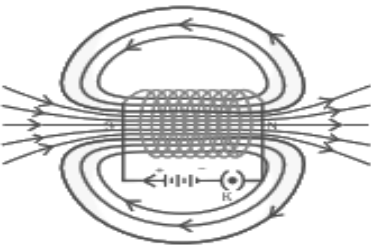
PAGE 3 {31/2/2}

	<ul style="list-style-type: none">Different variations give different advantages to organisms and only those which are beneficial to the organisms for survival are passed on to their progeny. Example- if there were a population of bacteria living in temperate waters and if water temperature increased by global warming, most of these bacteria would die but the few variants resistant to heat would survive and grow further.	1½	2						
12.	<ul style="list-style-type: none">Kitchen wastes can be converted into manure/compost.Newspapers, magazines, etc. can be recycled.Metals/glass/plastic wastes can be recycled. <p>(Any two ways or any other)</p>	1 1	2						
13.	(a) <ul style="list-style-type: none">Case P- Change occurs extremely slow / No change.Case Q- Limewater will turn milky because exhaled air contains high concentration of carbon dioxide.Case R- Fermentation occurs in sugar solution / limewater may turn milky. (b) (i) Case Q (ii) Case R	½ 1 ½ ½ ½	3						
14.	(a) <ul style="list-style-type: none">In a few reptiles, the temperature at which fertilised eggs are kept determine whether the animal developing from the eggs will be male or female.In snails, individuals can change sex. <p>(Any other example)</p> (b) <table border="1"><tr><td>Male sex chromosome</td><td>Female sex chromosome</td></tr><tr><td>Male has a mismatched pair i.e. 'XY' chromosomes.</td><td>Female has a perfect pair i.e. 'XX' chromosomes.</td></tr><tr><td>Y chromosome is smaller than X chromosome</td><td>Both X chromosomes are of same size</td></tr></table> <p>(Any one difference, Any other difference)</p>	Male sex chromosome	Female sex chromosome	Male has a mismatched pair i.e. 'XY' chromosomes.	Female has a perfect pair i.e. 'XX' chromosomes.	Y chromosome is smaller than X chromosome	Both X chromosomes are of same size	1 1 1	3
Male sex chromosome	Female sex chromosome								
Male has a mismatched pair i.e. 'XY' chromosomes.	Female has a perfect pair i.e. 'XX' chromosomes.								
Y chromosome is smaller than X chromosome	Both X chromosomes are of same size								
15.	(a) (i) <ul style="list-style-type: none">Organ - TestesConditions - Requires a lower temperature than the normal body temperature/Secretion of testosterone. (ii) The sperms formed in the testes are carried by Vas deferens and delivered to urethra (Common passage for both sperms and urine). /	1 1 2							

	<p>Testes → Vas deferens → Urethra</p> <p>(iii) Long tail of sperms.</p> <p style="text-align: center;">OR</p> <p>(b)(i)</p> <ul style="list-style-type: none"> Mechanical barrier / Female condom (Diaphragm)/ or similar covering worn in vagina Oral contraceptives/ Oral pills Copper - T / loops. <p style="text-align: right;">(Any two methods, Any other method)</p> <p>(ii) Surgical methods</p> <ul style="list-style-type: none"> Vas deferens in the male is blocked / Vasectomy Fallopian tube in the female is blocked / Tubectomy <p>(iii)</p> <p>Bacteria - Gonorrhoea / Syphilis (any other example)</p> <p>Virus - Warts / AIDS (any other example)</p>	<p>1</p> <p>2</p> <p>2</p> <p>½</p> <p>½</p>	<p>5</p>
16.	<p>(a) Actions which are controlled by forebrain / Actions which are under our control and are performed according to our will.</p> <p>(b) Cerebellum.</p> <p>(c) (i) Regulates involuntary functions like heart rate/ blood pressure/ Breathing / sneezing/ vomiting.</p> <p style="text-align: center;">OR</p> <p>(c) (ii) Animal muscles are made up of special proteins, that change both shape and arrangement in response to nervous electrical impulses, new arrangements of these proteins give the muscle cells a shorter form so, muscle cells move which help animals to move.</p>	<p>1</p> <p>1</p> <p>2</p> <p>2</p>	<p>4</p>
	<p>SECTION – B</p> <p>Chemistry</p>		
17.	(B) / Tartaric Acid	1	1
18.	(D) / pH falls below 5.6	1	1
19.	(D) / (ii) and (iii)	1	1
20.	(C) / X-Hydrochloric acid, Y-Carbon dioxide	1	1
21.	(B) / Mg reacts with water to produce H ₂ gas which helps in Floating	1	1
22.	(B) / The jewellery comes in contact with air, moisture and acids and corrodes.	1	1
23.	(C) / The green colour of the salt fades and a gas with the smell of burning sulphur is evolved.	1	1

	<p>(I) Red litmus solution will turn blue.</p> <p>(II) Sodium hydrogen carbonate and Ammonium chloride will be formed/ NaHCO_3 and NH_4Cl will be formed</p> <p style="text-align: center;">/</p> <p style="text-align: center;"> $\text{NaCl} + \text{H}_2\text{O} + \text{CO}_2 + \text{NH}_3 \rightarrow \text{NH}_4\text{Cl} + \text{NaHCO}_3$ (Ammonium chloride) (Sodium hydrogencarbonate) (award marks even if only equation is given) </p> <p style="text-align: center;">OR</p> <p>(c) (ii)</p> <ul style="list-style-type: none"> Bleaching Powder / CaOCl_2 / $\text{Ca}(\text{ClO})_2$ $\text{Ca}(\text{OH})_2 + \text{Cl}_2 \rightarrow \text{CaOCl}_2 + \text{H}_2\text{O}$ / $2\text{Ca}(\text{OH})_2 + 2\text{Cl}_2 \rightarrow \text{Ca}(\text{ClO})_2 + \text{CaCl}_2 + \text{H}_2\text{O}$ (deduct $\frac{1}{2}$ marks for no/incorrect balancing) 	<p>1</p> <p>1</p> <p>1</p> <p>1</p>	4
29.	<p>(a)</p> <p>(i) P- Ethanol / $\text{C}_2\text{H}_5\text{OH}$ / $\text{CH}_3\text{CH}_2\text{OH}$</p> <p>(ii)</p> <p>(I)</p> $\text{CH}_3 - \text{CH}_2\text{OH} \xrightarrow[\text{H}_2\text{SO}_4]{\text{Hot Conc.}} \text{CH}_2 = \text{CH}_2 + \text{H}_2\text{O}$ <p>(II) Dehydrating agent / Catalyst</p> <p>(iii)</p> <ul style="list-style-type: none"> Sweet smelling compound/ester is formed. $\text{CH}_3 - \text{COOH} + \text{CH}_3 - \text{CH}_2\text{OH} \xrightarrow{\text{Acid}} \text{CH}_3 - \underset{\text{O}}{\underset{\parallel}{\text{C}}} - \text{O} - \text{CH}_2 - \text{CH}_3 + \text{H}_2\text{O}$ <p style="text-align: center;">OR</p> <p>(b) (i)  (any other resonating structure)</p> <p>(ii)</p> <p>Carbon cannot form C^{4+} cation because removal of four electrons is energetically not possible. Carbon cannot form C^{4-} anion because nucleus with six protons cannot hold ten electrons.</p> <p>(iii) Covalent bond</p> <p>(iv)</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	

	<ul style="list-style-type: none"> If the distance of the object from the eye is increased, ciliary muscles relax, lens becomes thin and so the focal length increases If the distance between the object from the eye is decreased, the ciliary muscles contract, lens becomes thick and the focal length decreases. <p style="text-align: center;">OR</p> <p>(b) In myopic eye image is formed in front of the retina. A concave lens / diverging lens of suitable power will bring the image back on to the retina.</p>	1 1 2	2
35.	<p>(a)</p> <ul style="list-style-type: none"> Angle of incidence is equal to angle of reflection. The incident ray, the normal to the mirror at the point of incidence and the reflected ray, all lie in the same plane. <p>(b) $\angle i = 90^\circ - 40^\circ = 50^\circ$ $\angle r = \angle i = 50^\circ$</p>	1 1 $\frac{1}{2}$ $\frac{1}{2}$	3
36.	 <p>Resistance = Slope of V – I graph</p> $R = \frac{BC}{AC}$ $R = \frac{6.0 - 1.2}{2.0 - 0.4}$ $R = 3 \Omega$	 $\frac{1}{2}$ $\frac{1}{2}$	3
37.	<ul style="list-style-type: none"> The phenomenon of spreading light in different directions on interaction with particles of the medium. Light bounces back in a fixed direction after reflection while in scattering of light, it spreads in different directions. / Reflection of light is independent of the size of reflecting particles whereas the colour of the scattered light depends upon the size of scattering particles. 	1 2	3
38.	<p>(a) A part of current is consumed into useful work and rest is expended in heat to raise the temperature of gadget. (any other suitable explanation)</p>	1	

	<p>(b) $W = V \times Q = VIt = IR \times It$ $H = I^2Rt \quad / \quad \frac{V^2}{R}t$</p> <p>(c) (i) Electric heater, Oven, Electric iron (Any two, Any other) OR</p> <p>(c) (ii) When 1 kilowatt of power is used for 1 hour then energy consumed is 1 kWh $1 \text{ kWh} = 3.6 \times 10^6 \text{ J}$</p>	<p>1</p> <p>1+1</p> <p>1</p> <p>1</p>	4
39.	<p>(a) (i) (I) Imagine that you are holding a current carrying straight conductor in your right hand such that the thumb points towards the direction of current. Then your fingers will wrap around the conductor in the direction of the field lines of the magnetic field.</p> <p>(II) Stretch the thumb, fore finger and middle finger of your left hand such that they are mutually perpendicular. If the first finger (forefinger) points in the direction of the magnetic field and the middle finger (second finger) in the direction of the current, then the thumb will point in the direction of motion or the force acting on the conductor.</p> <p>(ii) (I)</p>  <p style="text-align: right;">Diagram</p> <p style="text-align: center;">Direction of current and magnetic field</p> <p>(II) Maximum- At point A Minimum- At point B</p> <p style="text-align: center;">OR</p> <p>(b) (i) (I) To study the magnetic effect of current. (II) It shows that a magnetic field is produced around the current carrying conductor.</p> <p>(ii) (I) The magnetic field of a solenoid is similar to that of a bar magnet in which the field lines emerge from one end</p>	<p>1</p> <p>1</p> <p>1/2</p> <p>1/2</p> <p>1</p> <p>1</p>	

	(North pole) showing divergence and merge at the other end (South pole) showing convergence.	1	
	(II) The current carrying solenoid behaves like a bar magnet which aligns itself along a particular direction (N-S) due to earth's magnetic field.	1	
	(III) If a fuse of higher rating is used, it will not be able to prevent the damage due to overloading. / If a fuse of lower rating is used, it will melt and break the circuit.	1	
			5
	- o O o -		

Marking Scheme
Strictly Confidential
(For Internal and Restricted use only)
Secondary School Examination, 2026 (Xth)
SUBJECT NAME SCIENCE (Q.P. CODE /Set No 31/2/3)

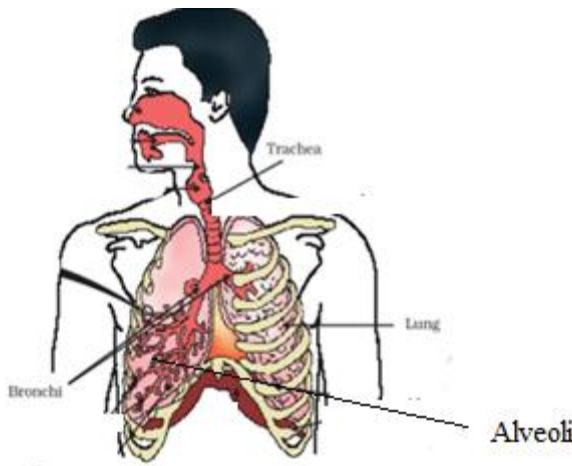
General Instructions: -

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 totaled 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	<p>Ensure that you do not make the following common types of errors committed by the Examiner in the past :-</p> <ul style="list-style-type: none"> • 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.) <p>Half or a part of answer marked correct and the rest as wrong, but no marks awarded.</p>
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.

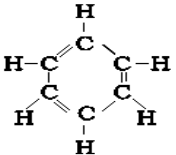
(PAPER CODE: 31/2/3) (10-02-86K)

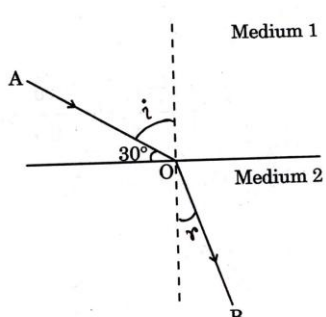
PAGE 3 {31/2/3}

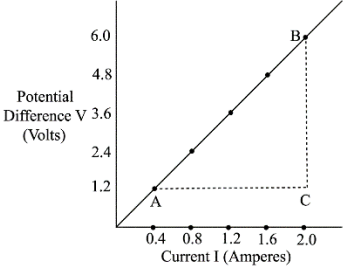
	global warming, most of these bacteria would die but the few variants resistant to heat would survive and grow further.		2						
12.	(a) Sewage should not contain solid waste, so sieve should be installed at the opening of drain. (or any other valid point) (b) Chemical treatment of industrial waste should be done before disposing it off. (or any other valid point)	1 1	2						
13.	(a)  (Award ½ mark for each labelling) (b) (i) Alveoli - Exchange of gases (ii) Respiratory pigment - Helps in the transportation of oxygen	2 ½ ½	3						
14.	(a) <ul style="list-style-type: none">In a few reptiles, the temperature at which fertilised eggs are kept determine whether the animal developing from the eggs will be male or female.In snails, individuals can change sex. (Any other example) (b) <table border="1"><thead><tr><th>Male sex chromosome</th><th>Female sex chromosome</th></tr></thead><tbody><tr><td>Male has a mismatched pair i.e, 'XY' chromosomes.</td><td>Female has a perfect pair i.e. 'XX' chromosomes.</td></tr><tr><td>Y chromosome is smaller than X chromosome.</td><td>Both X chromosomes are of same size.</td></tr></tbody></table> (Any one difference, Any other difference)	Male sex chromosome	Female sex chromosome	Male has a mismatched pair i.e, 'XY' chromosomes.	Female has a perfect pair i.e. 'XX' chromosomes.	Y chromosome is smaller than X chromosome.	Both X chromosomes are of same size.	1 1 1	3
Male sex chromosome	Female sex chromosome								
Male has a mismatched pair i.e, 'XY' chromosomes.	Female has a perfect pair i.e. 'XX' chromosomes.								
Y chromosome is smaller than X chromosome.	Both X chromosomes are of same size.								
15.	(a) Actions which are controlled by forebrain / Actions which are under our control and are performed according to our will. (b) Cerebellum.	1 1							

	(c)(i) Regulates involuntary functions like heart rate/ blood pressure/ Breathing / sneezing/ vomiting.	2	
	OR (ii) Animal muscles are made up of special proteins, that change both shape and arrangement in response to nervous electrical impulses, new arrangements of these proteins give the muscle cells a shorter form so, muscle cells move which help animals to move.	2	4
16.	<p>(a) (i)</p> <ul style="list-style-type: none"> • Organ - Testes • Conditions - Requires a lower temperature than the normal body temperature/Secretion of testosterone. <p>(ii) The sperms formed in the testes are carried by Vas deferens and delivered to urethra (Common passage for both sperms and urine). / Testes → Vas deferens → Urethra</p> <p>(iii) Long tail of sperms.</p> <p>OR</p> <p>(b)</p> <p>(i)</p> <ul style="list-style-type: none"> • Mechanical barrier / Female condom (Diaphragm)/ similar covering worn in vagina. • Oral contraceptives/ Oral pills • Copper - T / loops. <p>(Any two methods, Any other method)</p> <p>(ii) Surgical methods</p> <ul style="list-style-type: none"> • Vas deferens in the male is blocked / Vasectomy • Fallopian tube in the female is blocked /Tubectomy <p>(iii)</p> <p>Bacteria - Gonorrhoea / Syphilis (any other example)</p> <p>Virus - Warts / AIDS (any other example)</p>	<p>1</p> <p>1</p> <p>2</p> <p>1</p> <p>2</p> <p>2</p> <p>½</p> <p>½</p>	5
SECTION – B Chemistry			
17.	(C) / Oxalic acid	1	1
18.	(B) / Washing soda	1	1
19.	(C) / (i) and (iii)	1	1
20.	(C) / X-Hydrochloric acid, Y-Carbon dioxide	1	1

21.	(C) / The green colour of the salt fades and a gas with the smell of burning sulphur is evolved.	1	1
22.	(B) / The jewellery comes in contact with air, moisture and acids and corrodes.	1	1
23.	(B) / Mg reacts with water to produce H ₂ gas which helps in floating.	1	1
24.	(A) / Both A and R are true and R is the correct explanation of A.	1	1
25.	(a) $3\text{Fe(s)} + 4\text{H}_2\text{O(g)} \rightarrow \text{Fe}_3\text{O}_4\text{(s)} + 4\text{H}_2\text{(g)}$ (b) $\text{Ca(s)} + 2\text{H}_2\text{O(l)} \rightarrow \text{Ca(OH)}_2\text{(aq)} + \text{H}_2\text{(g)}$ (Deduct ½ mark for no/incorrect balancing in each case)	1 1	 2
26.	(a) (i) <ul style="list-style-type: none"> Lithium (Li) / Sodium (Na) / Potassium (K) (anyone) Graphite (ii) $\begin{array}{ccc} \text{Mg} & \longrightarrow & \text{Mg}^{2+} + 2e^- \\ [2, 8, 2] & & [2, 8] \\ \text{O} & + 2e^- \longrightarrow & \text{O}^{2-} \\ [2, 6] & & [2, 8] \end{array}$ $\text{Mg} \cdot + \cdot \text{O} \cdot \longrightarrow [\text{Mg}^{2+}] [\text{O}^{2-}]$ OR (b)(i) It is easier to obtain metal from its metal oxide / It is easier to reduce metal oxide to metal. (ii) Aluminium oxide can react with both acids as well as bases to form salt and water. / $\text{Al}_2\text{O}_3 + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2\text{O}$ $\text{Al}_2\text{O}_3 + 2\text{NaOH} \rightarrow 2\text{NaAlO}_2 + \text{H}_2\text{O}$ (iii) As they are highly reactive metals so exist in combined state.	½ ½ ½ ½ 1 1 1	 3
27.	(a) The process in which a metal is attacked by substances around it such as moisture, acids etc. (b) Oxidation of fats and oils present in food resulting in change of its smell and taste. (c) The reaction in which there is an exchange of ions takes place between the reactants.	1 1 1	 3
28.	(a) X - Chlorine gas Y - Hydrogen gas (b)	½ ½	

	<p>$2\text{NaCl}(\text{aq}) + 2\text{H}_2\text{O}(\text{l}) \rightarrow 2\text{NaOH}(\text{aq}) + \text{Cl}_2(\text{g}) + \text{H}_2(\text{g})$</p> <p>(Deduct ½ marks for no/incorrect balancing)</p> <p>(c) (i)</p> <p>(I) The red litmus solution will turn blue.</p> <p>(II) Sodium hydrogen carbonate and Ammonium chloride will be formed/ NaHCO_3 and NH_4Cl will be formed.</p> <p style="text-align: center;">/</p> <p>$\text{NaCl} + \text{H}_2\text{O} + \text{CO}_2 + \text{NH}_3 \rightarrow \text{NH}_4\text{Cl} + \text{NaHCO}_3$</p> <p style="text-align: center;">(Ammonium (Sodium chloride) hydrogencarbonate)</p> <p style="text-align: center;">OR</p> <p>(c) (ii)</p> <ul style="list-style-type: none"> • A-Bleaching Powder / CaOCl_2 / $\text{Ca}(\text{ClO})_2$ • $\text{Ca}(\text{OH})_2 + \text{Cl}_2 \rightarrow \text{CaOCl}_2 + \text{H}_2\text{O}$ <p style="text-align: center;">/</p> <p>$2\text{Ca}(\text{OH})_2 + 2\text{Cl}_2 \rightarrow \text{Ca}(\text{ClO})_2 + \text{CaCl}_2 + \text{H}_2\text{O}$</p> <p style="text-align: center;">(Deduct ½ mark for no/incorrect balancing)</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	4
29.	<p>(a)</p> <p>(i) P- Ethanol / $\text{C}_2\text{H}_5\text{OH}$ / $\text{CH}_3\text{CH}_2\text{OH}$</p> <p>(ii)</p> <p>(I)</p> <p>$\text{CH}_3 - \text{CH}_2\text{OH} \xrightarrow[\text{H}_2\text{SO}_4]{\text{Hot Conc.}} \text{CH}_2 = \text{CH}_2 + \text{H}_2\text{O}$</p> <p>(II) Dehydrating agent / Catalyst</p> <p>(iii)</p> <ul style="list-style-type: none"> • Sweet smelling compound/ester is formed. • <p>$\text{CH}_3 - \text{COOH} + \text{CH}_3 - \text{CH}_2\text{OH} \xrightleftharpoons{\text{Acid}} \text{CH}_3 - \underset{\text{O}}{\underset{\parallel}{\text{C}}} - \text{O} - \text{CH}_2 - \text{CH}_3 + \text{H}_2\text{O}$</p> <p style="text-align: center;">OR</p> <p>(b) (i)  (or other resonating structure)</p> <p>(ii)</p> <p>Carbon cannot form C^{4+} cation because removal of four electrons is energetically not possible. Carbon cannot form C^{4-} anion because nucleus with six protons cannot hold ten electrons.</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	

	<p>(iii) Covalent bond</p> <p>(iv)</p> $\text{CH}_3 - \text{CH}_2\text{OH} \xrightarrow[\text{Or acidified K}_2\text{Cr}_2\text{O}_7 + \text{Heat}]{\text{Alkaline KMnO}_4 + \text{Heat}} \text{CH}_3\text{COOH}$ <p>/</p> <p>Ethanol is converted to Ethanoic Acid by adding Alkaline KMnO₄/Acidified K₂Cr₂O₇ as oxidising agent.</p> <p>(v)</p> $\text{CH}_3\text{COOC}_2\text{H}_5 \xrightarrow{\text{NaOH}} \text{C}_2\text{H}_5\text{OH} + \text{CH}_3\text{COONa}$	1	
		1	
		1	5
	Section C Physics		
30.	(A) / Concave mirror, Nature of image-real	1	1
31.	(B) / Red, Yellow, Green, Blue, Violet	1	1
32.	(C) / Assertion (A) is true, but reason (R) is false.	1	1
33.	 <p> $\frac{\sin i}{\sin r} = n$ $\angle i = 90^\circ - 30^\circ = 60^\circ$ $\sin r = \frac{\sin i}{n}$ $\sin r = \frac{\sin 60}{\sqrt{3}}$ $\sin r = \frac{\sqrt{3}}{2\sqrt{3}}$ $\sin r = \frac{1}{2} \Rightarrow \sin r = \sin 30$ $r = 30^\circ$ </p>	<p>$\frac{1}{2}$</p> <p>1</p> <p>$\frac{1}{2}$</p>	2

34.	<p>(a)</p> <ul style="list-style-type: none"> If the distance of the object from the eye is increased, ciliary muscles relax, lens becomes thin and so the focal length increases If the distance between the object from the eye is decreased, the ciliary muscles contract, lens becomes thick and the focal length decreases. <p style="text-align: center;">OR</p> <p>(b) In myopic eye image is formed in front of the retina. A concave lens / diverging lens of suitable power will bring the image back on to the retina.</p>	1 1 2	 2
35.	<p>(a)</p> <ul style="list-style-type: none"> Convex lens When object is placed between focus and optical centre <p>(b) $f = +20$ cm $u = -30$ cm $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$ $\frac{1}{v} = \frac{1}{f} + \frac{1}{u}$ $\frac{1}{v} = \frac{1}{20} + \frac{1}{-30}$ $\frac{1}{v} = \frac{1}{60}$ $v = 60$ cm The image is formed at a distance of 60 cm on the other side of the optical centre.</p> <ul style="list-style-type: none"> Nature of image – Real, inverted 	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ 1	 3
36.	<ul style="list-style-type: none"> The phenomenon of spreading light in different directions on interaction with particles of the medium. Light bounces back in a fixed direction after reflection while in scattering of light, it spreads in different directions. /Reflection of light is independent of the size of reflecting particles whereas the colour of the scattered light depends upon the size of scattering particles 	1 2	 3
37.		2	

	(ii) An earth wire provides a low resistance conducting path for the current and thus, protect us from electric shock due to leakage of electric current to metallic body of electric appliances.	2	5
--	---	---	---