Secondary School Examination

March 2010

Marking Scheme - Science (Delhi) 31/1/1

1. The Marking Scheme provides general guidelines to reduce subjectivity in the marking. It carries only suggested value points for the answer. These are only guidelines and do not constitute the complete answer. The candidates can have their own expression and if the expression is correct, the marks may be awarded accordingly.

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3. If a question has parts, please award marks in 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.

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5. If a candidate has attempted an extra question, marks obtained in the question attempted first should be retained and the other answer should be scored out.

6. Wherever only two/three of a 'given' number of examples/factors/points are expected only the first two/three or expected number should be read. The rest are irrelevant and should not be examined.

7. There should be no effort at 'moderation' of the marks by the evaluating teachers. The actual total marks obtained by the candidate may be of no concern of the evaluators.

8. ½ mark may be deducted if a candidate either does not write units or writes wrong units in the final answer of a numerical problem.

9. A full scale of mark 0 to 100 has to be used. Please do not hestitate to award full marks if the answer deserves it.

10. Some of the questions relate to Higher Order Thinking Skills (HOTS). These questions are to be evaluated carefully so as to judge the candidate's understanding / analytical ability.

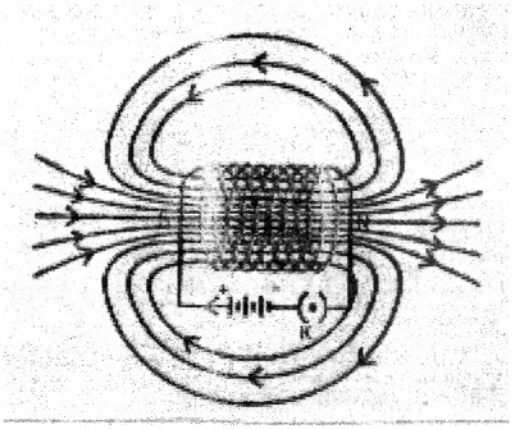
MARKING SCHEME

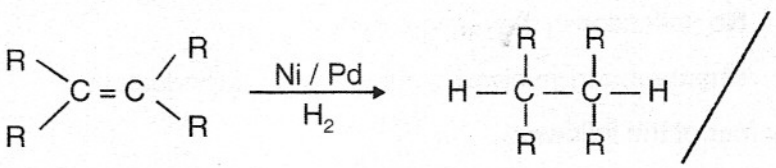
Code No. 31/1/1

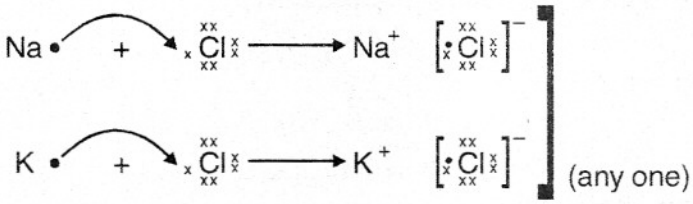
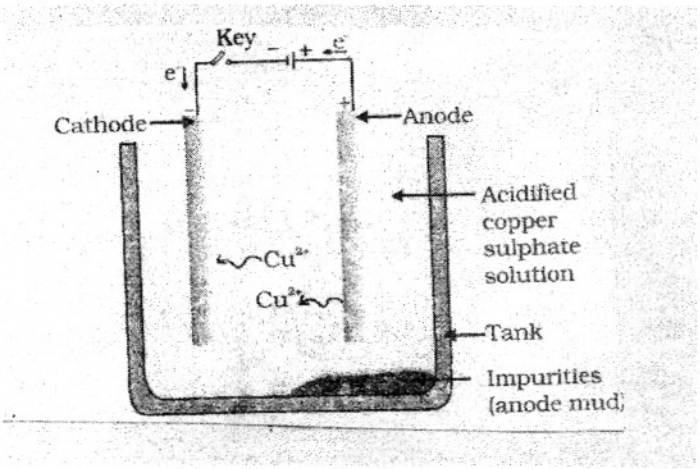
CLASS X - DELHI

SECTION - A

	Expected Answer / Value point	Marks	Total
1.	Iron nails get coated with a reddish brown substance.	½	
	Copper sulphate solution becomes light green	½	1
2.	Catenation / Tetravalency / Ability to form multiple bonds / Carbon – Carbon bond is very stable. (any two)	½, ½	1
3.	Because the angle of incidence is 0^0 / Ray passing through the centre of curvature is incident normally to the mirror.	1	1
4.	Virtual / Erect	1	1
5.	Positive charge / Proton	1	1
6.	Ciliary muscles	1	1
7.	(i) A white precipitate / Insoluble substance is formed.	½	
	(ii) If the reactants are in solid state.	½	
	(iii) $Na_2SO_4 + BaCl_2 \longrightarrow 2\ NaCl + BaSO_4$	½	
	(iv) Double displacement / Double decomposition / Precipitation	½	2
8.	(i) Methane / CH_4	½	
	(ii) By anaerobic decomposition of bio mass in the presence of micro-organisms.	½	
	(iii) It is a clean fuel It burns without smoke It leaves no residue Its heat capacity / calorific value is high It is used for lighting purpose Safe and efficient method of waste disposal slurry left behind can be used as an excellent manure. (Any two)	½, ½	2
9.	a) X – Violet	½	
	Y – Red	½	
	b) Due to difference in speed of different colours / Difference in wavelength and frequency / Refractive index of glass is different for different colours of light.	1	2
10.	Solenoid is a coil of many circular turns of insulated copper wire wrapped closely in the shape of a cylinder.	½	

	Expected Answer / Value point	Marks	Total
			
	pattern	½	
	direction	½	
	Pattern indicates that the magnetic field is uniform at all points inside the solenoid	½	2
11.	(i) Momentary deflection in the galvanometer to one side	½	
	(ii) Momentary deflection in the galvanometer, now in the opposite direction.	½	
	(iii) No deflection in the galvanometer	½	
	Phenomenon involved is electromagnetic induction	½	2
12.	Any four of the following :		
	(i) It can be used only at those places where wind blows for the greater part of the year.		
	(ii) Wind speed should be higher than 15 km/h to rotate the turbine at the required speed		
	(iii) Need of a back up facility when there is no wind		
	(iv) Requires large area for setting up wind energy farms		
	(v) Tower and blades require a high level of maintenance		
	(any other point)	½x4	2
13.	$\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$	½	
	$\frac{1}{u} = \frac{1}{24} - \frac{1}{18}$	½	
	$= \frac{3-4}{72} = \frac{-1}{72}$		
	$\therefore \quad u = -72$ cm		
	object should be placed at a distance of 72 cm from the lens	1	
	$m = \frac{v}{u}$	½	

	Expected Answer / Value point	Marks	Total
	$= \frac{+24}{-72}$		
	$\therefore \quad m = \frac{-1}{3}$	½	3
14.	A : Fe_2O_3, B : Al	½, ½	
	(i) $Fe_2O_3(s) + 2\ Al\ (s) \xrightarrow{heat} 2\ Fe\ (l) + Al_2O_3(s) + heat$	½	
	condition of the reaction, physical state of reactants and products, thermal status.	½	
	(ii) Displacement Reaction		
	Redox Reaction		
	Exothermic Reaction (any two)	1	3
15.	Double covalent bond / Alkenes / Triple covalent bond / Alkynes / Unsaturated compounds	½	
	Example : 		
	Or		
	Unsaturated fat + $H_2 \xrightarrow{Ni\ /\ Pd}$ saturated fat	1	
	Condition : Presence of Nickel / Palladium as catalyst	½	
	Change : The liquid reactant changes to solid product	½	
	Natural source : Vegetable oil	½	3
16.	(i) Third Period / Group – 1, 2, 13, 14, 15, 16, 17, 18 respectively.	½	
	(ii) Ionic / Electrovalent	½	
	(iii) A and B	½, ½	
	(iv) G/H	½	
	(v) CG_3	½	3
17	Sodium / Na, Potassium / K, Rubidium / Rb, Cesium / Cs (any two)	½, ½	

	Expected Answer / Value point	Marks	Total
	 (any one)	1	
	Ionic / Electrovalent bond	½	
	Salts / Ionic compounds	½	
	Physical properties :-		
	(i) Crystalline solid at room temperature		
	(ii) Brittle, hard solid		
	(iii) Soluble in water		
	(iv) Have high melting and boiling point		
	(v) Conduct electricity in aqueous / molten form		
	(any four)	4x½	5
	OR		
	Removal of impurities from a crude metal is called refining of metals	1	
	Electrolytic refining	1	
			
	Drawing	1	
	Any 2 labels	1	
	Description :		
	On passing the current through the electrolyte, the pure metal from the anode dissolves into the electrolyte. An equivalent amount of pure metal from the electrolyte is deposited on the cathode. The soluble impurities go into the solution, whereas, the insoluble impurities settle down at the bottom of the anode and are known as anode mud.	1	

18. (i) Work done in moving the charge W = VQ

Power input, $P = \frac{VQ}{t}$

$= V I$

∴ Energy, $E = P \times t = V I t$

This energy gets dissipated in the form of heat

∴ $H = V I t$

Applying ohm's law, we get

$H = I^2Rt$ 2

(ii) The relation is known as Joule's law of heating 1

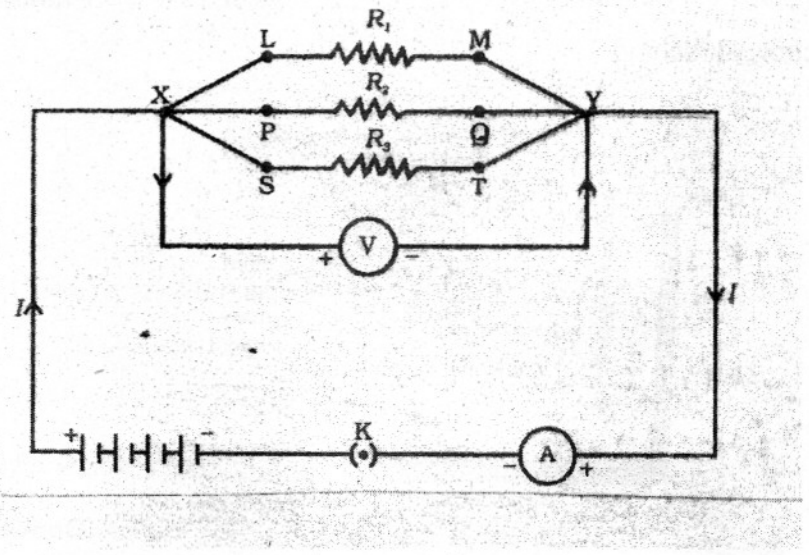
(iii) P = 12 W t = 1 minute = 60s

H = P x t ½

= 12 W x 60s ½

H = 720 J 1 5

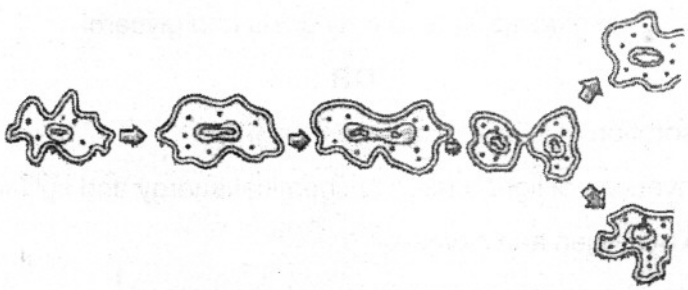
OR



- resistances in parallel ½
- placement of ammeter ½
- direction of current ½
- terminals to be marked ½

From the circuit, voltmeter and ammeter readings to be noted down. The ratio 1

of V and I gives the resistance /

	Expected Answer / Value point	Marks	Total
	By using the formula $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$		
	resistance of the combination can be found.		
	Ammeter is connected in series with the resistor	1	
	Voltmeter is connected in parallel with the resistor	1	
	SECTION - B		
19.	Chloroplast, chlorophyll	½, ½	1
20.	Vertebral column / Back bone		1
21.	Excessive use of natural resources / Causes pollution		1
22.	Chemical compounds which are poured into blood, help to control and coordinate	1	
	Thyroxin	½	
	Regulates carbohydrate, protein and fat metabolism	½	2
23.		½ x4	2
24.	<table><tr><th>Inherited</th><th>Acquired</th></tr><tr><td>passed on to the next generation eg. shape of ear lobe / color of eye / skin</td><td>not passed on to the next generation but are acquired eg. obesity / acqiuring knowledge / skills</td></tr></table> (any one example)		
25.	Deoxyribose nucleic acid	1	
	Nucleus	1	
	contains information for inheritance of features from parents to next generation	1	3
26.	• Non-biodegradable chemicals (toxic substances) which get accumulated progressively at each trophic level of a food chain.	1	

	Expected Answer / Value point	Marks	Total
	• Accumulation is progressive at each trophic level	1	
	• Maximum accumulation (concentration) is found in tertiary consumers.	1	3
27.	MOUTH : Salivary amylase secreted by salivary glands breaks starch to sugar.	½	
	STOMACH : Pepsin digests proteins and		
	HCl facilitates action of enzyme pepsin and creates acidic	½	
	meduim.	½	
	SMALL INTESTINE : Receives secretions from liver and pancreas.		
	Pancreas : Trypsin digests proteins	½	
	Lipase digests fats	½	
	Liver : Bile juice emulsifies fat	½	
	Bile juice makes the medium basic (for the action of pancreatic enzymes)	½	
	: Intestinal juice converts proteins to aminoacids, carbohydrates to glucose, fats to fatty acids and glycerol.	½,½,½	5
	OR		
	a) (i) Absorption of light energy by chlorophyll.	½	
	(ii) Conversion of light energy to chemical energy and splitting of water into hydrogen and oxygen.	½	
	(iii) Reduction of carbondioxide to carbohydrates.	½	
	• Massive amounts of gaseous exchange takes place through stomata	½	
	b) • Take a destarched potted plant.	½	
	• Cover part of a leaf with black paper and keep it in the sunlight for about 6 hrs.	½	
	• Decolorize the leaf by boiling in water and then alcohol in a water bath.	½	
	• Dip the leaf in dilute solution of iodine for a few minutes.	½	
	• Part of the leaf covered with black paper does not turn blue black, covered portion turns blue black.	½	
	• Covered portion does not synthesize starch, uncovered portion synthesizes starch.	½	

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March 2010

Marking Scheme - Science (Delhi) 31/1/2

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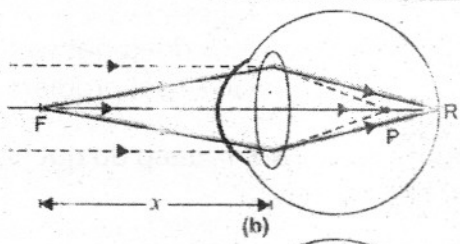
MARKING SCHEME

Code No. **31/1/2**

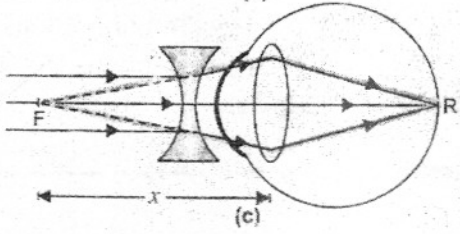
CLASS X - DELHI

SECTION - A

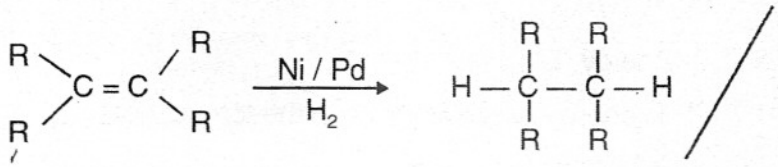
	Expected Answer / Value point	Marks	Total
1.	Between F and C	1	1
2.	No scattering of light / no atmosphere	1	1
3.	Positive charge / Proton	1	1
4.	Ratio of speed of light in air and speed of light in carbondisulphide is 1.63 / speed of light in air is 1.63 times the speed of light in carbondisulphide / speed of light in carbondisulphide is $\frac{1}{1.63}$ th of the speed of light in air	1	1
5.	Slaked lime / Calcium hydroxide / $Ca(OH)_2$ is formed.	1	1
6.	Catenation / Tetravalency / Ability to form multiple bonds / Carbon – Carbon bond is very stable. (any two)	½, ½	1
7.	East to West / west to east	½	
	Rule : Right hand thumb rule	½	
	Statement : 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 field lines of the magnetic field.	1	2
8.	(i) Momentary deflection in the galvanometer to one side	½	
	(ii) Momentary deflection in the galvanometer, now in the opposite direction.	½	
	(iii) No deflection in the galvanometer	½	
	Phenomenon involved is electromagnetic induction	½	2
9.	Myopia – Defect of vision in which a person can see nearby objects clearly but cannot see distant (far off) objects clearly.	1	
		1	2



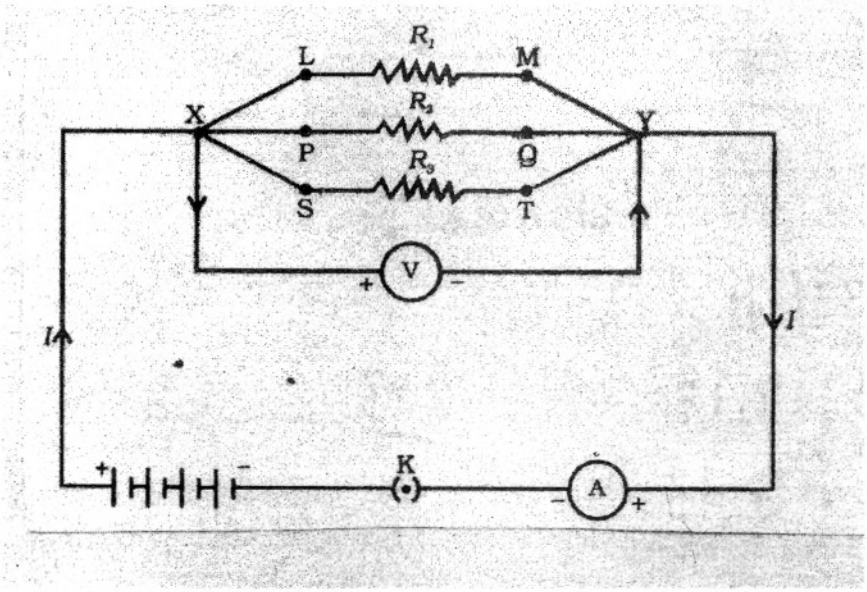
Myopic Eye
(Blurred image of object at infinity and sharp image of object at F (far point))

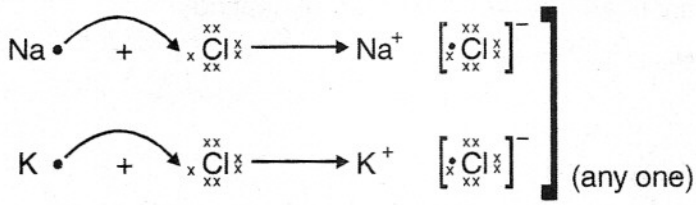
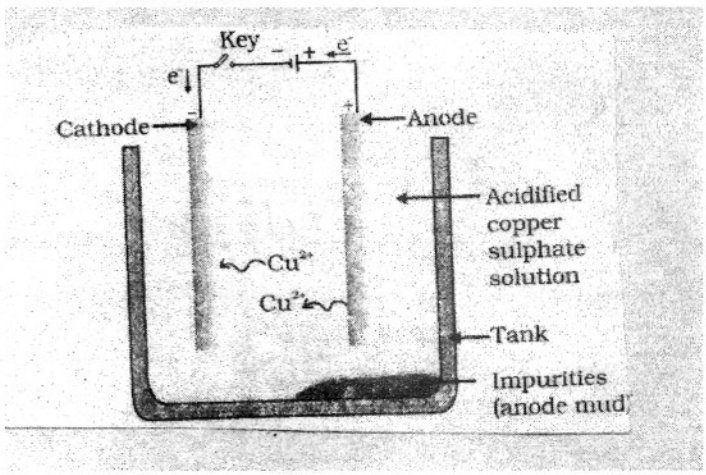


Corrected myopic eye
(Sharp image of object at infinity)

	Expected Answer / Value point	Marks	Total
	Note : full marks for the diag. may be given if only the correction of defect (second diagram) is drawn		
10. –	Solar cell panel – A large number of solar cells combined in an arrangement Advantages – (any two) (i) require little maintenance (ii) can be set up in remote and inaccessible areas (iii) no moving parts so do not need any focussing device. (iv) pollution free (or any other advantage)	1 ½x2	2
11.	A reaction in which both oxidation and reduction processes take place simultanously. Magnesium is oxidised Addition of oxygen to magnesium takes place / 2 Mg + O_2 ⟶ 2 MgO	1 ½ ½	2
12.	(i) Methane / CH_4 (ii) By anaerobic decomposition of bio mass in the presence of micro-organisms. (iii) It is a clean fuel It burns without smoke It leaves no residue Its heat capacity / calorific value is high It is used for lighting purpose Safe and efficient method of waste disposal slurry left behind can be used as an excellent manure. (Any two)	½ ½ ½, ½	2
13.	(i) Third period / 1, 2, 13, 14, 15, 16, 17, 18 respectively. (ii) H (iii) A (iv) E, F, G (any two) (v) D	½ ½ ½ ½, ½ ½	3
14.	Double covalent bond / Alkenes / Triple covalent bond / Alkynes / Unsaturated compounds Example : 	½	

	Expected Answer / Value point	Marks	Total
	Or		
	Unsaturated fat + $H_2 \xrightarrow{Ni / Pd}$ saturated fat	1	
	Condition : Presence of Nickel / Palladium as catalyst	½	
	Change : The liquid reactant changes to solid product	½	
	Natural source : Vegetable oil	½	3
15.	A : Fe_2O_3, B : Al		½, ½
	(i) $Fe_2O_3(s) + 2\ Al\ (s) \xrightarrow{heat} 2\ Fe\ (l) + Al_2O_3(s) + heat$	½	
	condition of the reaction, physical state of reactants and products, thermal status.	½	
	(ii) Displacement Reaction Redox Reaction Exothermic Reaction (any two)	1	3
16.	f = + 18 cm v = + 36 cm u = ? m = ?		
	$\frac{1}{u} = \frac{1}{v} - \frac{1}{f}$	½	
	$= \frac{1}{36} - \frac{1}{18} = \frac{-3}{108}$	½	
	$\therefore\ u = -36$ cm	1	
	$m = \frac{v}{u} = \frac{+36}{-36}$	½	
	$m = -1$ / equal in size to the object	½	3
	Altenatively : Answer may be reasoned out without doing calculations –		
	Focal length is 18 cm ∴ 2 F is at 36 cm.		
	So to have image at 2 F object should be placed at 2F	2	
	∴ Object distance = 36 cm		
	When object is at 2F, then size of image is same as that of object	1	
	∴ Magnification is 1		
17.	(i) Work done in moving the charge W = VQ		
	Power input, $P = \frac{VQ}{t}$		
	$= V I$		
	∴ Energy, E = P x t = V I t		
	This energy gets dissipated in the form of heat		
	∴ H = V I t		

	Expected Answer / Value point	Marks	Total
	Applying ohm's law, we get		
	$H = I^2Rt$	2	
(ii)	The relation is known as Joule's law of heating	1	
(iii)	P = 12 W t = 1 minute = 60s		
	H = P x t	½	
	= 12 W x 60s	½	
	H = 720 J	1	5
	OR		
			
	• resistances in parallel	½	
	• placement of ammeter	½	
	• direction of current	½	
	• terminals to be marked	½	
	From the circuit, voltmeter and ammeter readings to be noted down. The ratio of V and I gives the resistance	1	
	By using the formula $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ resistance of the combination can be found.		
	Ammeter is connected in series with the resistor	1	
	Voltmeter is connected in parallel with the resistor	1	

	Expected Answer / Value point	Marks	Tota
18.	Sodium / Na, Potassium / K, Rubidium / Rb, Cesium / Cs (any two)	½, ½	
	 (any one)	1	
	Ionic / Electrovalent bond	½	
	Salts / Ionic compounds	½	
	Physical properties :-		
	(i) Crystalline solid at room temperature		
	(ii) Brittle, hard solid		
	(iii) Soluble in water		
	(iv) Have high melting and boiling point		
	(v) Conduct electricity in aqueous / molten form		
	(any four)	4x½	5
	OR		
	Removal of impurities from a crude metal is called refining of metals	1	
	Electrolytic refining	1	
			
	Drawing	1	
	Any 2 labels	1	
	Description :		
	On passing the current through the electrolyte, the pure metal from the anode dissolves into the electrolyte. An equivalent amount of pure metal from the electrolyte is deposited on the cathode. The soluble impurities go into the solution, whereas, the insoluble impurities settle down at the bottom of the		

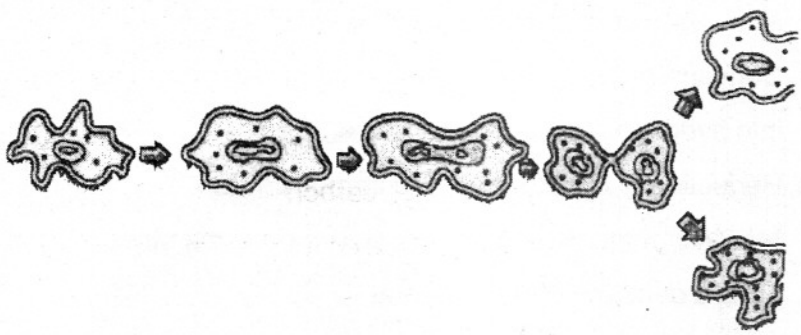
	Expected Answer / Value point	Marks	Total
	anode and are known as anode mud.	1	
	SECTION - B		
19.	roots, shoots	½, ½	1
20.	Paper, timber, lac, sports equipments (any two)	½, ½	1
21.	Chloroplast, chlorophyll	½, ½	1
22.	On touching a hot object, the impulses are carried from the receptors (skin) to the spinal cord via sensory neurons.	1	
	The motor neurons from the spinal cord carry the impulses (signals) to the muscles (effectors) which makes the muscles of the hand to move away from the hot object. / Explain with the help of diagram.	1	2
23.			

Inherited	Acquired
passed on to the next generation	not passed on to the next generation but are acquired
eg. shape of ear lobe / color of eye / skin	eg. obesity / acqiuring knowledge / skills

½, ½ — ½, ½ — 2

(any one example)

24.



½ x4 — 2

25.
- Non-biodegradable chemicals (toxic substances) which get accumulated progressively at each trophic level of a food chain. — 1
- Accumulation is progressive at each trophic level — 1
- Maximum accumulation (concentration) is found in tertiary consumers. — 1 — 3

26. Growing new plant from vegetative parts of plant like root, stem and leaves. — 1

Examples : Sugarcane (stem)

Bryophyllum (leaf) (any other suitable example) — ½, ½

	Expected Answer / Value pointMarks	Marks	Total
	Advantages :		
	• helps is raising seedless varieties		
	• plants produced by vegetative propagation are genetically similar.		
	• bear flowers and fruits earlier than those produced from seeds.		
	(any two)	½, ½	3
27.	MOUTH : Salivary amylase secreted by salivary glands breaks starch to sugar.	½	
	STOMACH : Pepsin digests proteins and		
	HCl facilitates action of enzyme pepsin and creates acidic	½	
	meduim.	½	
	SMALL INTESTINE : Receives secretions from liver and pancreas.		
	Pancreas : Trypsin digests proteins	½	
	Lipase digests fats	½	
	Liver : Bile juice emulsifies fat	½	
	Bile juice makes the medium basic (for the action of pancreatic		
	enzymes)	½	
	: Intestinal juice converts proteins to aminoacids, carbohydrates		
	to glucose, fats to fatty acids and glycerol.	½,½,½	5
	OR		
	a) (i) Absorption of light energy by chlorophyll.	½	
	(ii) Conversion of light energy to chemical energy and splitting of water		
	into hydrogen and oxygen.	½	
	(iii) Reduction of carbondioxide to carbohydrates.	½	
	• Massive amounts of gaseous exchange takes place through stomata	½	
	b) • Take a destarched potted plant.	½	
	• Cover part of a leaf with black paper and keep it in the sunlight for		
	about 6 hrs.	½	
	• Decolorize the leaf by boiling in water and then alcohol in a water bath.	½	
	• Dip the leaf in dilute solution of iodine for a few minutes.	½	
	• Part of the leaf covered with black paper does not turn blue black,		
	covered portion turns blue black.	½	
	• Covered portion does not synthesize starch, uncovered portion		
	synthesizes starch.	½	

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5. If a candidate has attempted an extra question, marks obtained in the question attempted first should be retained and the other answer should be scored out.

6. Wherever only two/three of a 'given' number of examples/factors/points are expected only the first two/three or expected number should be read. The rest are irrelevant and should not be examined.

7. There should be no effort at 'moderation' of the marks by the evaluating teachers. The actual total marks obtained by the candidate may be of no concern of the evaluators.

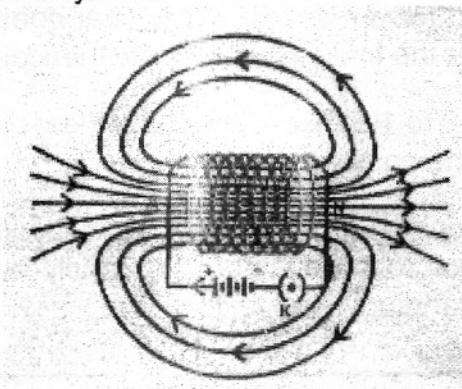
8. ½ mark may be deducted if a candidate either does not write units or writes wrong units in the final answer of a numerical problem.

9. A full scale of mark 0 to 100 has to be used. Please do not hestitate to award full marks if the answer deserves it.

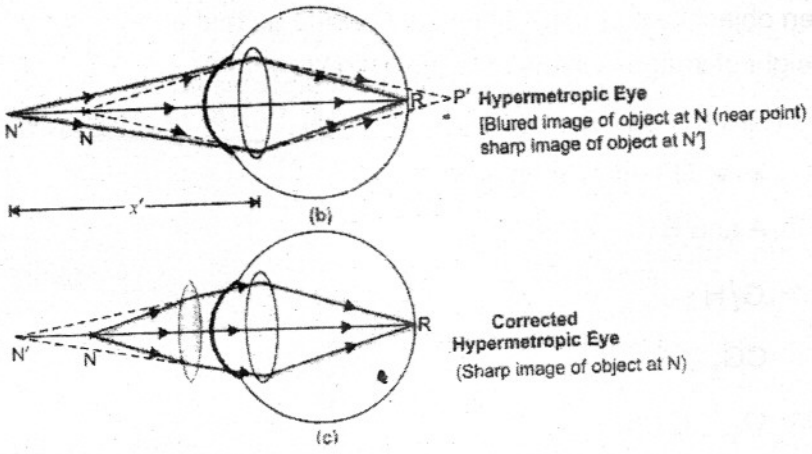
10. Some of the questions relate to Higher Order Thinking Skills (HOTS). These questions are to be evaluated carefully so as to judge the candidate's understanding / analytical ability.

MARKING SCHEME
CLASS X - DELHI
SECTION - A

Code No. **31/1/3**

	Expected Answer / Value point	Marks	Total
1.	Ciliary muscles	1	1
2.	$f = r/2 = \frac{50}{2} = 25$ cm	½	
	Convex mirror	½	1
3.	Virtual / Erect	1	1
4.	Positive charge / Proton	1	1
5.	Atoms are conserved / Mass is conserved	1	1
6.	Catenation / Tetravalency / Ability to form multiple bonds / Carbon – Carbon bond is very stable. (any two)	½, ½	1
7.	Change in colour / Change in state / Change in temperature/ Evolution of a gas (any two)	½, ½	
	Example : $Zn + 2$ dil. $HCl \longrightarrow ZnCl_2 + H_2$ (or any other example)	1	2
8.	Coal, petroleum and natural gas/ Fuels formed over millions of years by the degradation of animal or vegetable matter.	1	
	Two disadvantages :		
	(i) Their stocks are limited and they are non-renewable.		
	(ii) They cause air pollution on burning. (or any other)	½, ½	2
9.	(i) Momentary deflection in galvanometer needle	½	
	Due to current induced in it / Due to change in magnetic field lines.	½	
	(ii) Momentary deflection in galvanometer (in the opposite direction)	½	
	Due to change in magnetic field lines, so current is induced.	½	2
10.	Solenoid is a coil of many circular turns of insulated copper wire wrapped closely in the shape of a cylinder.	1	
			
	pattern	½	
	direction	½	2

	Expected Answer / Value point	Marks	Total
11.	Defect of vision in which a person can see distant objects clearly but can't see nearby objects clearly.	1	



Note : full marks for the diag. may be given if only the correction of defect (second diagram) is drawn — 1 — 2

12. Any four of the following :

(i) It can be used only at those places where wind blows for the greater part of the year.

(ii) Wind speed should be higher than 15 km/h to rotate the turbine at the required speed

(iii) Need of a back up facility when there is no wind

(iv) Requires large area for setting up wind energy farms

(v) Tower and blades require a high level of maintenance

(any other point) — ½x4 — 2

13. $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$ — ½

$\therefore \frac{1}{u} = \frac{1}{50} - \frac{1}{25}$ — ½

$= -\frac{1}{50}$

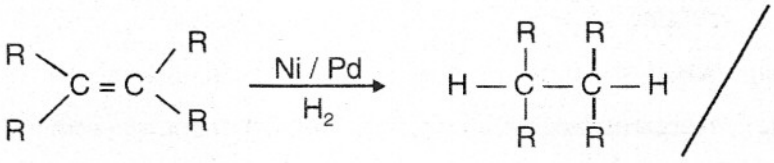
$\therefore \quad u = -50$ cm — 1

$m = \frac{v}{u} = \frac{+50}{-50} = -1$ / same size as the object — ½, ½ — 3

Alternatively: Answer may be reasoned out without calculation

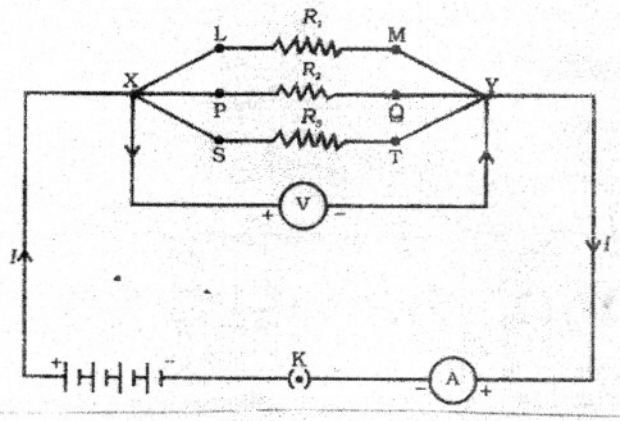
Focal length is 25 cm $\therefore$ 2F is 50 cm.

So in order to have image at 50 cm, (2F) object should be placed at 50 cm

	Expected Answer / Value point	Marks	Total
	from the lens	2	
	∴ Object distance = 50 cm		
	When object is at 2F, size of image is same as that of object.		
	∴ Height of image is same / Magnification is 1	1	
14.	(i) Third Period / Group – 1, 2, 13, 14, 15, 16, 17, 18 respectively.	½	
	(ii) Ionic / Electrovalent	½	
	(iii) A and B	½, ½	
	(iv) G/H	½	
	(v) CG_3	½	3
15.	A : Fe_2O_3, B : Al	½, ½	
	(i) $Fe_2O_3(s) + 2\ Al\ (s) \xrightarrow{heat} 2\ Fe\ (l) + Al_2O_3(s) + heat$	½	
	condition of the reaction, physical state of reactants and products, thermal status.	½	
	(ii) Displacement Reaction Redox Reaction Exothermic Reaction (any two)	1	3
16.	Double covalent bond / Alkenes / Triple covalent bond / Alkynes / Unsaturated compounds	½	
	Example : 		
	Unsaturated fat + $H_2 \xrightarrow{Ni\ /\ Pd}$ saturated fat	1	
	Condition : Presence of Nickel / Palladium as catalyst	½	
	Change : The liquid reactant changes to solid product	½	
	Natural source : Vegetable oil	½	3
17.	(i) Work done in moving the charge W = VQ		
	Power input, $P = \frac{VQ}{t}$		
	$= V\ I$		
	∴ Energy, $E = P \times t = V\ I\ t$		
	This energy gets dissipated in the form of heat		
	∴ $H = V\ I\ t$		
	Applying ohm's law, we get		

	Expected Answer / Value point	Marks	Total
	$H = I^2Rt$	2	
(ii)	The relation is known as Joule's law of heating	1	
(iii)	P = 12 W t = 1 minute = 60s		
	H = P x t	½	
	= 12 W x 60s	½	
	H = 720 J	1	5

OR



• resistances in parallel	½
• placement of ammeter	½
• direction of current	½
• terminals to be marked	½

From the circuit, voltmeter and ammeter readings to be noted down. The ratio of V and I gives the resistance 1

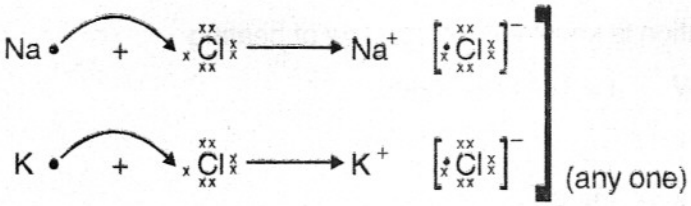
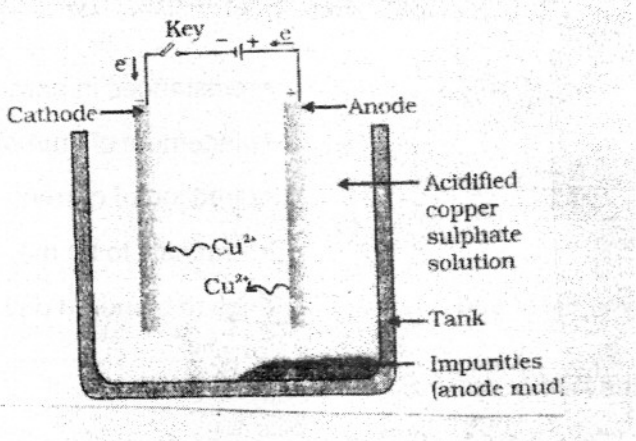
By using the formula $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$

resistance of the combination can be found.

Ammeter is connected in series with the resistor 1

Voltmeter is connected in parallel with the resistor 1

18. Sodium / Na, Potassium / K, Rubidium / Rb, Cesium / Cs (any two) ½, ½

Expected Answer / Value point	Marks	Total
 (any one)	1	
Ionic / Electrovalent bond	½	
Salts / Ionic compounds	½	
Physical properties :-		
(i) Crystalline solid at room temperature		
(ii) Brittle, hard solid		
(iii) Soluble in water		
(iv) Have high melting and boiling point		
(v) Conduct electricity in aqueous / molten form		
(any four)	4x½	5
OR		
Removal of impurities from a crude metal is called refining of metals	1	
Electrolytic refining	1	
		
Drawing	1	
Any 2 labels	1	
Description :		
On passing the current through the electrolyte, the pure metal from the anode dissolves into the electrolyte. An equivalent amount of pure metal from the electrolyte is deposited on the cathode. The soluble impurities go into the solution, whereas, the insoluble impurities settle down at the bottom of the anode and are known as anode mud.	1	
SECTION - B		

	Expected Answer / Value point	Marks	Total
19.	Insulin, Pancreas	½, ½	1
20.	Fire wood, small timber, thatch, bamboo, fruits, nuts and medicines. (for any two or three items award ½ mark, all four items award 1 mark)	1	1
21.	Chloroplast, chlorophyll	½, ½	1
22.	Directional movement of a plant part in response to sunlight / Source of light.	1	
	Activity :		
	Take a potted plant in a dark room which receives sunlight from one direction.	½	
	After 2-3 days shoot grows (bends) towards light	½	2
23.			

Pollination	Fertilisation
1) occurs in plants only	1) occurs both in plant and animals
2) transfer of pollen grains from anther of a flower to stigma of same or another flower	2) fusion between male and female gametes
3) requires agents	3) agents not required

(any two) 1,1 2

24.

Inherited	Acquired
passed on to the next generation	not passed on to the next generation but are acquired
eg. shape of ear lobe / color of eye / skin	eg. obesity / acquiring knowledge / skills
	Any one example

½, ½ ½, ½ 2

25. Ozone is a product of UV radiations acting on oxygen molecules.

$$O_2 \xrightarrow{UV} O + O$$

$$O + O_2 \longrightarrow O_3 \text{ (Ozone)}$$

1

Ozone shields the earth's surface at the higher levels from UV radiations coming from the sun. These radiations are highly damaging to organisms as they cause skin cancer / cataract. 1, 1 3

26. Deoxyribose nucleic acid 1

Nucleus 1

	Expected Answer / Value point	Marks	Total
	contains information for inheritance of features from parents to next generation	1	3
27.	MOUTH : Salivary amylase secreted by salivary glands breaks starch to sugar.	½	
	STOMACH : Pepsin digests proteins and		
	HCl facilitates action of enzyme pepsin and creates acidic meduim.	½ ½	
	SMALL INTESTINE : Receives secretions from liver and pancreas.		
	Pancreas : Trypsin digests proteins	½	
	Lipase digests fats	½	
	Liver : Bile juice emulsifies fat	½	
	Bile juice makes the medium basic (for the action of pancreatic enzymes)	½	
	: Intestinal juice converts proteins to aminoacids, carbohydrates to glucose, fats to fatty acids and glycerol.	½,½,½	5
	OR		
	a) (i) Absorption of light energy by chlorophyll.	½	
	(ii) Conversion of light energy to chemical energy and splitting of water into hydrogen and oxygen.	½	
	(iii) Reduction of carbondioxide to carbohydrates.	½	
	• Massive amounts of gaseous exchange takes place through stomata	½	
	b) • Take a destarched potted plant.	½	
	• Cover part of a leaf with black paper and keep it in the sunlight for about 6 hrs.	½	
	• Decolorize the leaf by boiling in water and then alcohol in a water bath.	½	
	• Dip the leaf in dilute solution of iodine for a few minutes.	½	
	• Part of the leaf covered with black paper does not turn blue black, covered portion turns blue black.	½	
	• Covered portion does not synthesize starch, uncovered portion synthesizes starch.	½	