Secondary School Examination

March 2008

Marking Scheme - Science (Outside Delhi) 31/1, 31/2, 31/3

1. The Marking Scheme provides general guideline 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.

2. 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.

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.

4. If a question does not have any parts, marks be awarded in the left hand side margin.

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 a numerical.

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.

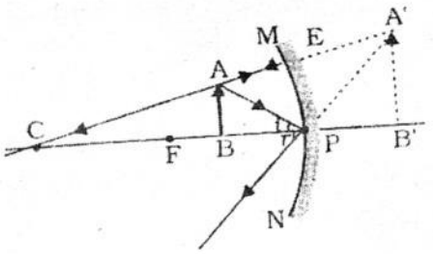
10. Some of the questions relate to higher order thinking (HOT) ability. These questions are indicated by asterisk (*) and are to be evaluated carefully so as to judge the candidate's understanding / analytical ability.

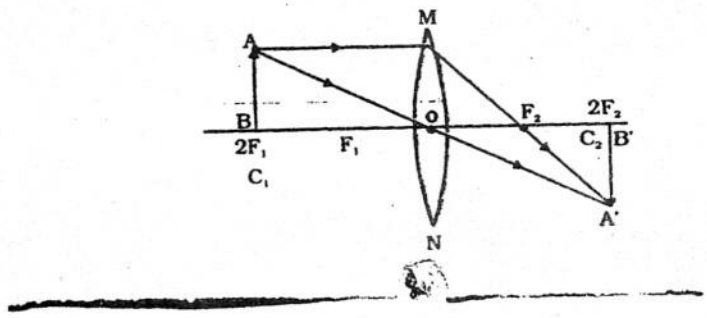
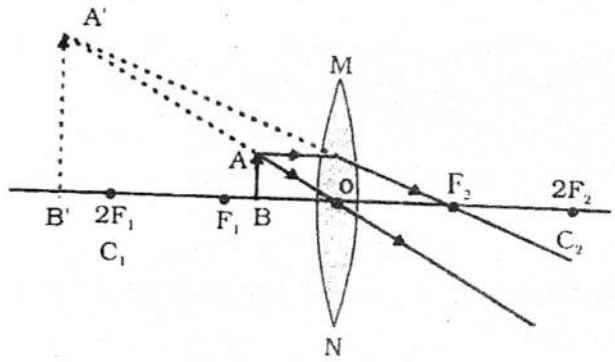
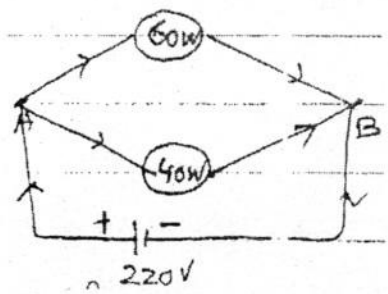
MARKING SCHEME

Code No. **31/1**

CLASS X - OUTSIDE DELHI

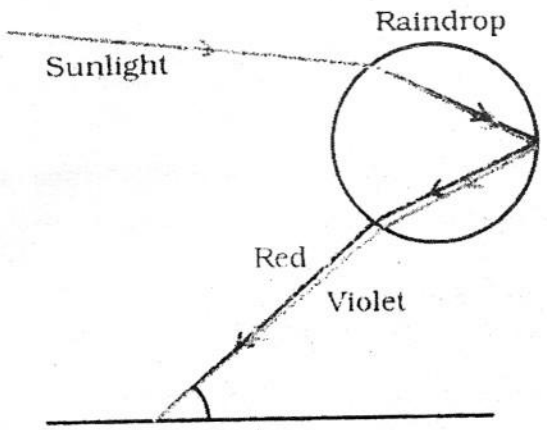
SECTION - A

31/1	31/2	31/3	Expected Answer / Value point	Marks	Total
1.	–	–	$3\ Fe\ (s) + 4\ H_2O\ (g) \longrightarrow Fe_3O_4\ (s) + 4H_2\ (g)$ [There is no provision for ½ mark]	1	1
*2.	5	3	Breaking down of glucose / food in the presence of oxygen with release in energy.	1	1
3.	4	1	When acid rain water flows into the rivers, it lowers the pH of river water making the survival of aquatic life difficult.	1	1
4.	–	–	Figure  	1	1
*5.	2	4	In series, same current flows through each device, but devices need current of different values to operate / if one device is defective, current is cut off / total resistance of the circuit increases so current flowing is reduced. / Selective operation of devices not possible	1	1
6.	1	5	40 W lamp	1	1
7.	–	–	Washing soda : $Na_2CO_3 . 10H_2O$	½	
			It is obtained by heating baking soda /		
			$2\ NaHCO_3 \xrightarrow{\Delta} Na_2CO_3 + H_2O + CO_2$.		
			$Na_2CO_3 + 10H_2O \longrightarrow Na_2CO_3 . 10H_2O$.	1	
			Uses : Glass, soap and paper industries. (any one)	½	2
8.	9.	10	$CaCO_3 \xrightarrow{\Delta} CaO + CO_2$ (or any other example).	1	
			Activity Take some lead nitrate powder in a boiling tube and heat. Brown fumes are observed due to decomposition.	1	2

31/1	31/2	31/3	Expected Answer / Value point	Marks	Total
9.	8	7	(a) Figure A' 	1	
			(b) Figure 	1	2
10	–	–	Magnetic field - The region around a magnet in which force of the magnet can be experienced.	1	
			A compass needle is a small bar magnet so it experiences the force of the other bar magnet when brought near it and deflects.	1	2
11.	–	–	*(a) Covalent compounds do not provide ions in aqueous solutions.	1	
			(b) Propanone / acetone	1	
			(c) CO_2 gas. By passing the gas through lime water which turns milky.	½, ½	3
12.	–	–	(a) Amphoteric oxides are metal oxides which show both basic as well as acidic behaviour	1	
			ZnO, Al_2O_3	½, ½	
			*(b) Non metals can not lose electrons to H^+ to form H_2 gas / Non-metals are electron-acceptors.	1	3
13.	14	13	(a) 	1	

31/1	31/2	31/3	Expected Answer / Value point	Marks	Total
			(b) $I = \frac{P}{V}$		
			$I_1 = \frac{60W}{220V} = \frac{3}{11}$ A		
			$I_2 = \frac{40W}{220V} = \frac{2}{11}$ A		
			$I = I_1 + I_2 = \frac{3}{11} + \frac{2}{11} = \frac{5}{11}$ A = 0.45A		
			(c) E = P x t		
			= (40 W + 60 W) x 1 h = 100 wh or 0.1 kwh	1	3
14.	13	14	(a) Short circuiting - When neutral and live wire come in direct contact.	1	
			Overloading - When too many appliances are conncted to a single socket drawing much more current or power than permissible / when there is an increase in supply voltage.	1	
			*(b) Resistivity of an alloy is higher than its constituent metal / alloys do not oxidise as easily as constituent metal at high temperature	1	3
15.	16	15	(a) (i) Sodium		
			(ii) Fluorine	½, ½	
			*(b) (i) N_2O_5		
			(ii) H_2O / OH_2	½, ½	
			*(c) So that elements with similar chemical properties may fall in the same group.	1	
			(d) Scandium (Sc) and Germanium (Ge)	½, ½	
			(e) Atomic mass of the middle element is the average of the other two.	1	5
			OR		
			(a) To make the understanding of properties of elements and compounds simpler / to make order out of chaos.	1	
			(b) Any two of the following :		
			(i) Atomic mass		
			(ii) Properties of hydrides and oxides of elements.		
			(iii) Melting and boiling points of elements.	½, ½	
			(c) To leave scope of search for the yet undiscovered elements.	1	
			(d) They had not been discovered by that time.	1	
			(e) Same slot because their chemical properties are same.	1	5

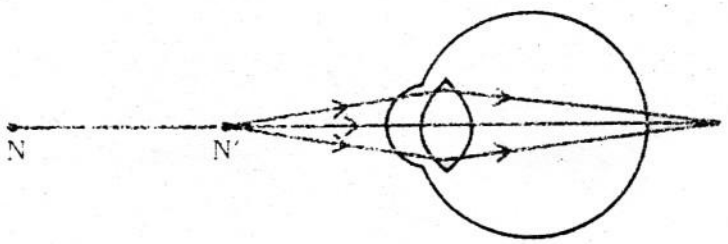
31/1	31/2	31/3	Expected Answer / Value point	Marks	Total
16.	15	16	*(a) Dispersion - The splitting of white light into its constituent colours.	½	
			Rainbow formation (figure)	1	



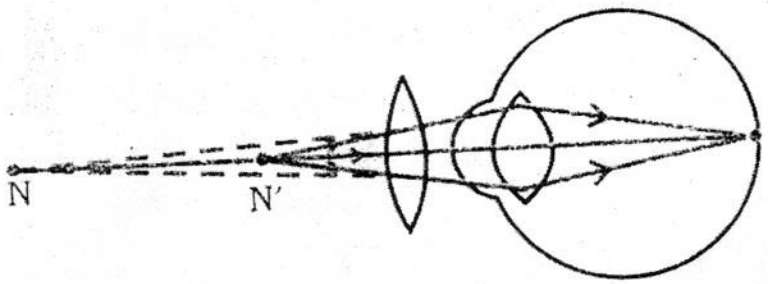
Water droplets in air refract and disperse the incident sunlight then reflect it internally and finally refract it again when it comes out of the droplet / Due to the dispersion of light and internal reflection, different colours of sunlight reach the observer's eye and is visible in the form of a rainbow. 1

(b) Hypermetropia - defect of vision due to which a person clearly sees distant objects but cannot clearly see nearby objects ½

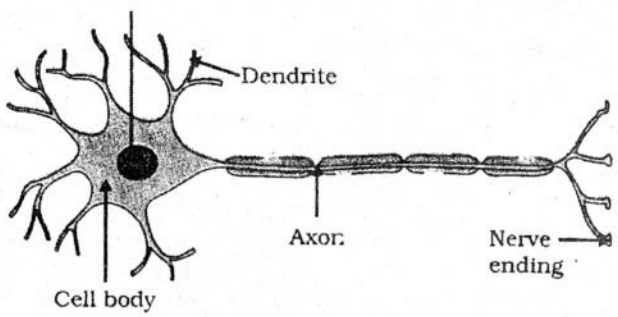
(i) Figure 1

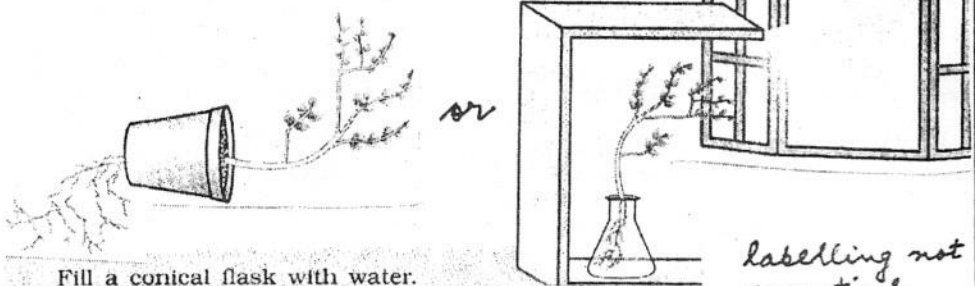


(ii) Figure 1 5



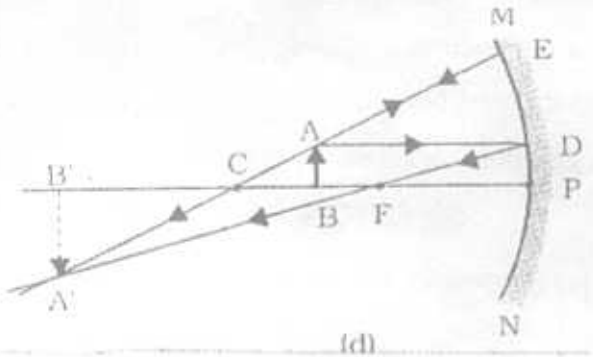
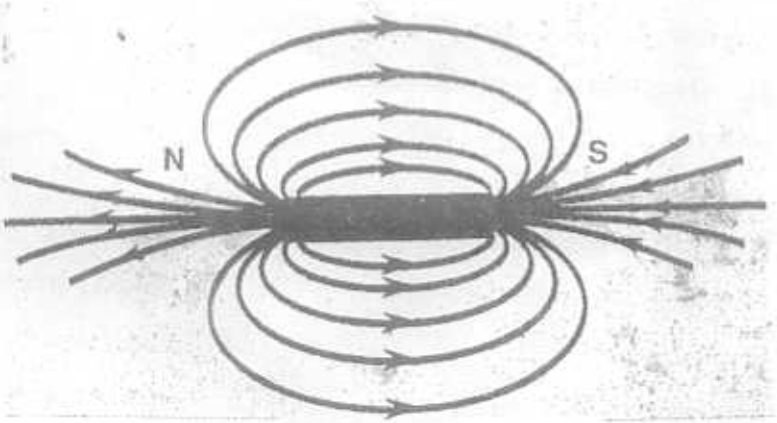
31/1	31/2	31/3	Expected Answer / Value point	Marks	Total
			OR		
			(a) (i) due to scattering of light	1	
			(ii) due to atmospheric refraction	1	
			(iii) At the near point of eye, curvature of eye lens is maximum and focal length minimum. If object is placed nearer than it, eye lens can't adjust its curvature.	1	
			(b) Presbyopia - defect of vision in which the eye is unable to see nearby as well as far off objects clearly.	1	
			Causes -		
			– weakening of ciliary muscles	½	
			– diminishing flexibility of the eye lens	½	5
			SECTION - B		
17	–	–	Ground water	1	1
*18	17	19	Leads to variations / Evolution	1	1
19	18	17	CO_2 from the environment ; N_2 from the soil and Environment.	½, ½	1
20.	21	20	Any four of the following :-		
			(i) High Calorific Value		
			(ii) Produces no smoke on burning		
			(iii) Burns smoothly (without explosion)		
			(iv) No residue on combustion.	4x½	2
			or any other		
21	20	21	(a) From wind : (Any one of the following points)		
			(i) Wind energy can not be harnessed at places where wind does not blow at a minimum speed of 15 km / h.		
			(ii) Wind is not a dependable source as sometimes air is still and at other times there are storms.	1	
			(b) From tides : (Any one of the following points)		
			(i) There are only few sites suitable for building tidal dams.		
			(ii) The rise and fall of sea water during high and low tides is not enough to generate electricity on a large scale.	1	2
22	24	23	(a) Blood Vessels : Transport of blood / channel for blood movement.		
			(b) Blood Platelets : clotting of blood / prevent excessive bleeding by blood clotting.		

31/1	31/2	31/3	Expected Answer / Value point	Marks	Total
			(c) Lymph : Carries digested fats / Drains excess fluid back to the blood. / Fight germs / Gives immunity.		
			(d) Heart : Helps to circulate blood in the whole body by acting as a pump / To pump the blood to various body parts.	4x½	2
23	–	–	(i) Bacterial : Gonorrhoea / syphilis.	½	
			Viral : Warts / AIDS.	½	
			(ii) by the use of condoms or any other suitable answer.	1	2
24	23	22	Fossils : Remains or traces of animals and plants of the past on rocks.	1	
			Fossils give information about evolutionary relationships between different species.	1	2
25	26	25	(i) UV rays in atmosphere split some molecular oxygen (O_2) into free oxygen (O) atoms.	1	
			(ii) These atoms combine with molecular oxygen to form O_3.		
			OR		
			$O_2 \xrightarrow{\text{UV rays}} O + O$		
			$O + O_2 \longrightarrow O_3$.		
			Damage to ozone layer will allow UV rays to reach on the earth causing skin cancer. / Cataract / crop damage or any other.	1	
			Release of chlorofluoro carbon or fluoro carbon in the atmosphere. / CFCs which are used as refrigerants or in fire extinguishers.	1	3
26.	–	–	(i) Respiratory pigment / Haemoglobin takes up O_2 from the air in the lungs and carries it to tissues.	1	
			(ii) CO_2 is being transported from various tissues into the alveoli by blood and is released during exhalation.	1	
			Within the Lungs, the passage divides into smaller and smaller tubes which finally terminate in ballon like structures which are alveol :.	1	3
27.	27	27	*(a) 	1	

31/1	31/2	31/3	Expected Answer / Value point	Marks	Total
			4 Labels : Nucleus, Dentrite, cell Body, Axon	4x½	
			(b) (i) at the end of the dendritic tip of a nerve cell. / Dendrite	1	
			(ii) from the dendrite to the cell body and then along the axon to it's end.	1	5
			OR		
			(a) (i) Phototropism : The movement of a plant or it's part in response to light.	1	
			(ii) Geotropism : The movement of a plant or it's part in response to gravity.	1	
			Activity : 7.2 (6 point) or any other activity with diagram	1	
			 or labelling not essential		
			Fill a conical flask with water. Cover the neck of the flask with a wire mesh. Keep two or three freshly germinated bean seeds on the wire mesh. Take a cardboard box which is open from one side. Keep the flask in the box in such a manner that the open side of the box faces light coming from a window (Fig. 7.5). After two or three days, you will notice that the shoots bend towards light and roots away from light.	1	
			or any other activity with diagram.		
			(b) (i) Auxin : - Stimulate the cells to grow longer / promotes growth / cel elongation.	½	
			(ii) Abscisic acid : It inhibts growth / wilting of leaves or any other.	½	5

MARKING SCHEME
CLASS X - OUTSIDE DELHI
SECTION - A

Code No. **31/2**

31/1	31/2	31/3	Expected Answer / Value point	Marks	Total
–	3.	–	Figure  	1	1
–	6	–	$2\ Fe\ SO_4 \xrightarrow{heat} Fe_2O_3 + SO_2 + SO_3$ [There is no provision for ½ mark]	1	1
–	7	–	Figure  	1	
			Properties - (any <u>two</u> of the following) – direction of magnetic field lines is from north pole of the magnet to the south pole outside the magnet. – magnetic field lines do not cross each other. – degree of closeness of the field lines indicates the strength of the magnet.	½, ½	2
	10.		$CaOCl_2$. It is prepared by the action of chlorine on dry slaked lime / $Ca(OH)_2 + Cl_2 \longrightarrow CaOCl_2 + H_2O$. It is used for bleaching wood pulp in paper factories.	½ 1 ½	2

31/1	31/2	31/3	Expected Answer / Value point	Marks	Tot
	11.		Sodium (Na) and Potassium (K).	½, ½	
			Observations :- (Any three of the following)		
			(i) Violent reaction		
			(ii) Heat is evolved		
			(iii) Gas bubbles are evolved.		
			(iv) Evolved gas catches fire	3x½	
			The evolved gas is combustible / catches fire	½	
			SECTION - B		
–	19.	–	Fire wood should be replaced by the alternate sources of energy due to the following reasons :- (Any two)		
			1. It is non renewable resource.		
			2. Leads to deforestation.		
			3. Causes global warming / Pollution.		
			4. Causes ecological imbalance.		
			or any other.	2x½	
–	22.	–	Any two of the following :		
			(i) Gonorrhoea, syphilis, warts, AIDS.	2x½	
			Use of condoms or any other suitable answer.	1	
–	25.	–	Any three of the following points :		

	Aerobic Respiration	***Anaerobic Respiration***
(i)	It takes place in the presence of Oxygen.	It takes place In the absence of O_2.
(ii)	More energy is released.	Less energy is released.
(iii)	CO_2 and H_2O molecules are formed	Ethyl alcohol / Lactic acid and CO_2 are formed.
(iv)	Common in higher plants and animals.	Common in certain micro-organisms

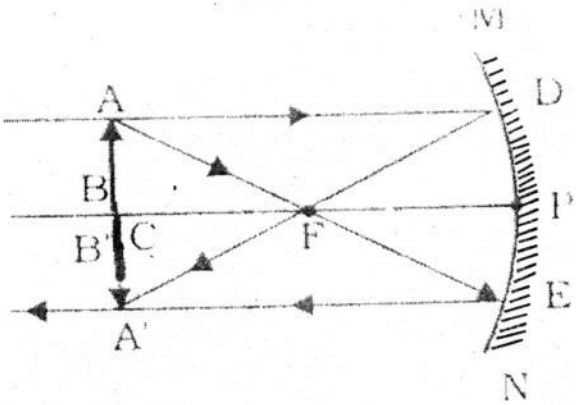
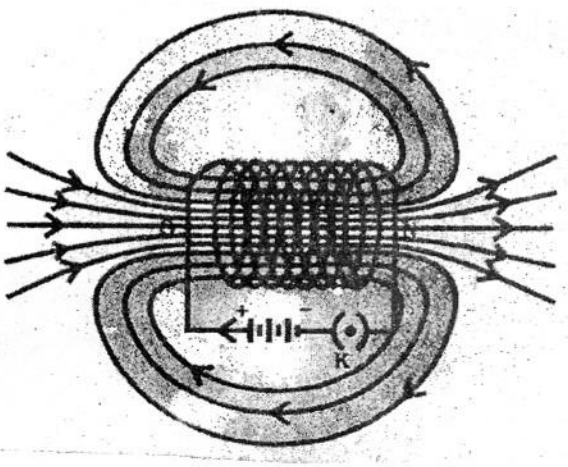
3x1

MARKING SCHEME

Code No. **31/3**

CLASS X - OUTSIDE DELHI

SECTION - A

31/1	31/2	31/3	Expected Answer / Value point	Marks	Total
			Section - A		
–	–	2.	$MnO_2 + 4\ HCl \longrightarrow MnCl_2 + Cl_2 + 2\ H_2O$ [There is no provision for ½ mark]	1	1
–	–	6.	Figure  	1	1
–	–	8.	Figure  Conclusion - Field is uniform inside the solenoid / one end of the solenoid behaves like a magnetic north pole and the other like a south pole / it behaves like a bar magnet.	1 1	2
–	–	9.	$CaSO_4$. ½ H_2O Plaster of Paris is prepared by heating gypsum at 373K / $CaSO_4.2\ H_2O \xrightarrow{373\ K} CaSO_4.½\ H_2O + 1½\ H_2O$ Gypsum, Calcium Sulphate dihydrate	½ ½ ½, ½	2

31/1	31/2	31/3	Expected Answer / Value point	Marks	Total
–	–	12.	(a) (i) Al, Fe. Zn (any one)	1	
			(ii) Pb, Ag, Cu, Au, Pt (any one)	1	
			(b) Sodium is more reactive than calcium, so the heat evolved is more when it reacts with water which leads to catching fire.	1	3
			Section - B		
–	–	18.	Methane		
–	–	24.	Seminal Vesicles - Their secretion provides nutrition to sperms.	½	
			Prostrate gland - Their secretion makes transport of sperm easier.	½	
			Functions :. (i) produce sperms.	½	
			(ii) secrete male hormone / Testosteron.	½	2
–	–	26.	Any two of the following :		
			1. Aerobic respiration		
			2. Anaerobic re piration in yeast cells / fermentation		
			3. Anaerobic respiration in muscle cells. (any two)	2x½	
			Aerobic Respiration / ***Anaerobic Respiration***		
			(i) It takes place in the presence of O_2 / (i) It takes place in the absence of O_2.		
			(ii) More energy is produced / (ii) Less energy is produced.		
			(iii) CO_2 and H_2O molecules are formed / (iii) Ethyl alcohol / Lactic acid and CO_2 is formed	2x1	3