

Strictly Confidential- (For Internal and Restricted Use Only) Secondary School Examination
COMPARTMENT EXAMINATION
July 2018

Marking Scheme – Science (Blind) 31/B

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. Any other individual response with suitable justification should also be accepted even if there is no reference to the text.
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. All the Head Examiners / Examiners are instructed that while evaluating the answer scripts, if the answer is found to be totally incorrect, the (X) should be marked on the incorrect answer and awarded '0' marks.
9. $\frac{1}{2}$ mark may be deducted if a candidate either does not write units or writes wrong units in the final answer of a numerical problem.
10. A full scale of mark 0 to 100 has to be used. Please do not hesitate to award full marks if the answer deserves it.
11. As per orders of the Hon'ble Supreme Court the candidates would now be permitted to obtain photocopy of the Answer Book on request on payment of the prescribed fee. All Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points given in the marking scheme.

**MARKING SCHEME
CLASS X – BLIND**

	Expected Answer/ Value point	Marks	Total
SECTION – A			
Q 1.	Concave lens/ Diverging lens	1	1
Q2.	<ul style="list-style-type: none"> Ability of an eye to adjust its focal length with the help of ciliary muscles so as to focus the nearby as well as distant objects distinctly 	1	1
Q3.	<ul style="list-style-type: none"> P- Calcium Oxide ,CaO CaO + H₂O → Ca(OH)₂ 	½ , ½ 1	2
Q4.	Wind Energy/ Solar Energy/ Energy of flowing Water/ Biomass/ any other (any two) Reason- Nature renews these sources again and again	½ , ½ 1	2
Q5.	<ul style="list-style-type: none"> Each step of the food chain where transfer of energy takes place. Plants → Grasshopper → Frog → Snake (or any other) 	1 1	2
Q6.	<ul style="list-style-type: none"> CaOCl₂ By passing chlorine gas over dry slaked lime, Ca (OH)₂ Ca(OH)₂ + Cl₂ → CaOCl₂ + H₂O Use: For bleaching in textile industry/ As an oxidizing agent/ As a disinfecting agent/ Any Other (any one use) <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> Plaster of Paris/ CaSO₄. ½ H₂O/ Calcium Sulphate hemihydrate When left in open, it absorbs moisture from the air and forms a hard substance (Gypsum) CaSO₄ . ½ H₂O + ½ H₂O → CaSO₄ . 2H₂O 	1 1 ½ ½ 1 1 1	3
Q7.	<ul style="list-style-type: none"> Ethanoic acid turns blue litmus red, whereas ethanol does not. Ethanoic acid reacts with sodium hydrogen carbonate to evolve a gas with brisk effervescence but ethanol does not. Alkaline potassium permanganate, KMnO₄ or acidified potassium dichromate, K₂Cr₂O₇. 	1 1 ½ , ½	3
Q8.	<ul style="list-style-type: none"> First group; because each element has one valence electron. Lithium /Li ; because tendency to lose electron is least. Potassium / K;because it has the maximum number of shells. 	½ , ½ ½ , ½ ½ , ½	3
Q9.	<ul style="list-style-type: none"> Role of plant hormones: Chemical control in the plants is performed through plant hormones. Cytokinin/ auxins Auxin is involved in phototropism; 	1 ½ ½	

	<ul style="list-style-type: none"> Growing plants when detect light coming from one side, the auxin synthesized at shoot tip diffuses towards the shady side of the shoot, which stimulates the cells to grow vigorously. Consequently the shoot bends towards the source of light. 	$\frac{1}{2}, \frac{1}{2}$	3
	OR		
	a) i) Insulin – Pancreas ii) Thyroxine - Thyroid b) Feedback Mechanism <ul style="list-style-type: none"> High glucose level in blood induces the pancreatic cells to produce more insulin which converts glucose to glycogen Low glucose level in the blood does not induce the pancreatic cell to produce insulin so that less conversion of glucose to glycogen occurs. 	$\frac{1}{2}, \frac{1}{2}$ $\frac{1}{2}$	1 $\frac{1}{2}$
Q10.	a) (i) Cerebellum ii) Mid Brain (Medulla Oblongata) b) <ul style="list-style-type: none"> To facilitate the communication between CNS and other parts of the body Cranial nerves arise from brain ; Spinal nerves arise from spinal cord 	$\frac{1}{2}, \frac{1}{2}$	1 $\frac{1}{2}, \frac{1}{2}$ 3
Q11.	<ul style="list-style-type: none"> Remains/ impressions of the dead organisms that lived in the remote past./ preserved in layers of rocks. Once in a while the body or at least some parts of a dead organism may lie in an environment that does not let it decompose completely. Such body parts or their preserved traces from fossils. Two Methods – (i) Relative method (ii) Carbon Dating 	1 $\frac{1}{2}, \frac{1}{2}$	1 $\frac{1}{2}, \frac{1}{2}$ 3
	OR		
	<ul style="list-style-type: none"> Origin of a new species from pre- existing species Four Factors - (i) Natural Selection (ii) Genetic Drift (iii) Geographical Isolation (iv) Mutation/ Accumulation of favourable variations and changes in genes. 	1 $\frac{1}{2} \times 4$	
Q12	<ul style="list-style-type: none"> The fine particle in the atmosphere scatter the light of shorter wavelengths (blue) more strongly than the light of longer wavelengths (red). Therefore, the sky appears blue to the observers from the surface of the earth. Dark Reason- There is no medium in the space to scatter the light of the sun. 	1 $\frac{1}{2}$ $\frac{1}{2}$	1 3
Q13	<ul style="list-style-type: none"> There will be a magnetic field of similar nature. Reason : A beam of alpha particles may be considered as a current carrying conductor (alpha particles carry positive charge) No, there will be no magnetic field. Reason: Neutrons are neutral particles carrying no charge 	$\frac{1}{2}$ 1 $\frac{1}{2}$	1 3
Q14.	<ul style="list-style-type: none"> Fuse is used for protecting the appliance(s) due to short circuiting/ overloading. 	1	

	<ul style="list-style-type: none"> Fuses are rated for a certain maximum current. A fuse blows off when a current more than the rated value flows through it. If a fuse is replaced by one with a larger/ higher rating, the appliance may get damaged while the protecting fuse does not burn off. 	1 1	3
Q15.	<ul style="list-style-type: none"> Because local people were real stakeholders. They were totally dependent on the forests. They help in cycling of water/ O₂/ CO₂ and other nutrients and thus maintain their supply in nature. Concern for environment, togetherness, sense of belongingness (or any other) (any two) 	1 1 1	3
Q16.	<p>a)</p> <ul style="list-style-type: none"> A chemical equation in which total mass of the reactants is equal to the total mass of products /a chemical equation in which the number of atoms of each elements is equal on the reactants as well as on the products side. To obey the law of conservation of mass / mass can neither be created nor destroyed in a chemical reaction. <p>b) i) $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$ (Blue) (Green)</p> <p>ii) $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2 + \text{Heat}$</p> <p>iii) $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \rightarrow \text{BaSO}_4\downarrow + 2\text{NaCl}$ (White ppt)</p>	1 1 1 1	5
Q17.	<p>a)</p> <p>i. Metals high up in the reactivity series are very reactive and can not be reduced by reducing agents like carbon. Hence, they are extracted by electrolytic reduction whereas metals in the middle of the reactivity series can easily be extracted from their oxides by reducing agents like carbon.</p> <p>ii. Because they differ in their reactivity/ Same reducing agent cannot be used for both.</p> <p>b) Extraction of sodium is done by electrolysis of molten NaCl.</p> $2\text{NaCl} \xrightarrow{\text{Electricity}} 2\text{Na} + \text{Cl}_2$ <p>(molten)</p> <p>Explanation: On passing electricity through molten NaCl, sodium is obtained at cathode and chlorine is liberated at anode.</p> <p style="text-align: center;">OR</p> <p>a) Amphoteric oxides- Oxides which show both acidic and basic character. Example- Al₂O₃ ; ZnO</p> <p>b) Cinnabar is an ore of mercury/ HgS Extraction $2\text{HgS} + 3\text{O}_2 \xrightarrow{\text{Heat}} 2\text{HgO} + \text{SO}_2$</p> $2\text{HgO} \xrightarrow{\text{Heat}} 2\text{Hg} + \text{O}_2$ <p>Cinnabar is roasted (heated in air), is converted into mercuric oxide which decomposes due to heat to form mercury.</p>	1, 1 1 1 1 1 1 1 1	5

Q18	a) <ul style="list-style-type: none"> • Heart- To pump blood through arteries to various parts of the body • Blood – A medium to transport various nutrients gases and waste materials. • Blood Vessels Arteries- Carry blood from heart to all parts of the body Veins- Bring back blood to the heart Capillaries- Exchange of materials between the blood and surrounding cells. b) The blood has platelet cells which plug the cuts / leaks thus helping in clotting of blood.	1 1 1 1 ½ ½	5
Q19.	<ul style="list-style-type: none"> • A process of transfer of pollen grains from anther to stigma of the same flower or of the different flower of the same species • By wind, water or animals. • When pollen lands on a suitable stigma, a pollen tube carrying the male gamete, grows out of the pollen grains, travels through the style and reaches the female germ cells in the ovaries. The male gamete fuses with the female gamete to give rise to a zygote. 	1 1 ½ 2 ½	5
Q20	a) Laws of refraction (i) The incident ray, the refractive ray and the normal to the surface of separation of two transparent media at the point of the incidence all lie in the same plane. (ii) The ratio of sin of angle of incidence to the sin of angle of refraction is a constant for the light of a given colour and for the given pair of media b) <i>Absolute refractive index of a medium</i> = $\frac{\text{speed of light in air}}{\text{speed of light in the medium}}$ c) $\mu_d = \frac{c}{v_d}$; $\mu_g = \frac{c}{v_g}$ $\mu_d v_d \Rightarrow v_d = \frac{\mu_g v_g}{\mu_d} = \frac{1.5 \times 2 \times 10^8 \text{ms}^{-1}}{2.42} = 1.24 \times 10^8 \text{ms}^{-1}$	1 1 1 2	5
OR			
	a) Laws of reflection i) The incident ray, the normal to the mirror at the point of incidence and the reflected ray, all lie in the same plane ii) The angle of incidence is equal to the angle of reflection b) Properties of image formed by plane mirror (i) Virtual, (ii) Same size (iii) Laterally inverted (iv) erect (any two) c) Hence, $f = -20 \text{ cm}$; $u = -30 \text{ cm}$; $v = ?$ $\frac{1}{v} + \frac{1}{u} = \frac{1}{f} \Rightarrow \frac{1}{v} = \frac{1}{f} - \frac{1}{u} \Rightarrow v = \frac{vf}{u-f}$ $\therefore v = \frac{-30 \text{ cm} \times -20 \text{ cm}}{-30 \text{ cm} - (-20 \text{ cm})} = -60 \text{ cm}$	1 1 ½, ½ ½ 1 ½	

Q21	a) Electric power: The rate at which electrical energy is consumed Power, $P = \frac{(\text{Potential difference, } V)^2}{\text{Resistance, } R}$ or $P = \frac{V^2}{R}$ b) Hence, $V = 220 \text{ V}$; $I = 5.0 \text{ A}$; $P = ?$; $t = 5 \text{ h}$; $E = ?$ $P = VI = 220 \text{ v} \times 5 \text{ A} = 1100 \text{ W}$ Energy $E = P \times t = 1100 \text{ W} \times 5 \text{ h} = 5500 \text{ Wh} = 5.5 \text{ kWh}$	1 1 1 ½ 1 ½	5
SECTION B			
Q22.	(i) Turns red (ii) No change (iii) Bubbles of a colourless gas (iv) Brisk effervescence	½ x 4	2
Q23.	By adding equal amount of soap solution to both the samples taken in test tube and measuring the length of the lather/foam formed. The test tube in which more lather/foam is formed contains soft water.	1 1	2
Q24.	• Safranin after obtaining material, Glycerine after putting stained material on the slide • Safranin is used to make stomata distinctly visible. Glycerine is used to prevent the material from drying.	½, ½ ½, ½	2
Q25	Parent amoeba → elongation of nucleus → constriction followed by division of nucleus and cytoplasm → Daughter amoebae	½ x 4	2
Q26	• Object- well illuminated: clearly/ distinctly visible: Most distant (any two) • Distance between the lens and the screen: Image of distant object is formed at the focus of the lens/ focal length is the distance between the optical centre and principal focus of the lens.	½, ½ ½, ½	2
Q27	(i) Selection of the resistor of higher values so that the minimum current is drawn from the source/ cell/ battery. (ii) Flow of current for a shorter duration/ only while taking observations. (iii) Ammeter should be connected in series whereas voltmeter should be connected in parallel. (iv) All connection should be neat and tight (v) Circuit diagram/ circuit connection should be duly checked by the teacher in-charge. (any four)	½ x 4	2
OR			
	• Graph – Straight line graph passing through the origin and making an angle with the X-axis (voltage axis)	1	
	• $V \propto I$ or $I \propto V$	1	