*Strictly Confidential- (For Internal and Restricted Use Only)* **Secondary School Examination**
**SUMMATIVE ASSESSMENT**
**March 2018**

## Marking Scheme – Science (for Blind Candidates) 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. 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.

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** **Code No. 31/B**

**CLASS X – BLIND**

**Max. Mark: 80**

| | Expected Answer/ Value point | Marks | Total |
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| | **SECTION – A** | | |
| | | | |
| Q 1. | Atmospheric refraction | 1 | 1 |
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| Q2. | There is no atmosphere in the space for scattering of light. | 1 | 1 |
| | | | |
| Q3. | (i) Hydrocarbons/ Compounds having formula $C_nH_{2n+2}$ / saturated hydro carbon / with single C – C bond<br>(ii) Hydrocarbons/ Compounds having formula $C_nH_{2n}$ / having double or C = C bond<br>(iii) Hydrocarbons/ Compounds having formula $C_nH_{2n-2}$ / having triple or C ≡ C bond.<br>• Alkane / Butane | ½ x 4 | 2 |
| | | | |
| Q4. | • Nuclear fission<br>• Uranium<br>• Advantages:<br>Less pollution<br>Enormous amount of energy released.<br>Nuclear power plants may be constructed at any place. (any two) | ½, ½<br><br><br><br>½ x 2 | 2 |
| | | | |
| Q5. | Decomposers – micro organisms which breakup the dead complex organic matter into simpler in organic matter.<br>Role – As natural cleansing agent<br>Return the nutrients to the soil<br>Help in recycling of matter between biotic and abiotic components of the biosphere (any two) | 1<br><br><br><br>½ x 2 | 2 |
| | | | |
| Q6. | • Baking powder<br>• Ingredients – sodium hydrogen carbonate + tartaric acid<br>• Sodium hydrogen carbonate on heating releases carbon dioxide which make pakora crisp and soft.<br>• Tartaric acid helps in removing bitter taste.<br>• $2NaHCO_3 \xrightarrow{Heat} Na_2CO_3 + H_2O + CO_2$ | ½<br>½ + ½<br>½<br><br>½<br><br>½ | |
| | **OR** | | |
| | • Water of crystalisation – fixed number of water molucules present in one formula unit of a salt.<br>• Two salts – Magnesium Sulphate hepta Hydrate $MgSO_4 . 7H_2O$<br>Sodium Sulphate deca Hydrate $Na_2SO_4 . 10H_2O$ | 1<br><br>½ + ½<br>½ + ½ | 3 |
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| Q7. | Homologues series – A series of carbon compound in which the successive members differ by – $CH_2$ group / series of compounds in which the same functional group substitute for hydrogen in a carbon chain is called a homologous series.<br>Characteristics – Gradation in physical properties<br>All members have similar chemical properties<br>All members are represented by same general formula<br>Difference of 14 u in molecular mass of successive members (any two)<br>• $C_2H_2$ and $C_3H_4$<br>• because both are alkynes having general formula $C_nH_{2n-2}$ | 1<br>½ + ½<br>½<br>½ | 3 |
| | | | |
| Q8. | (i) P and Q / S and T as each pair has same number of shells<br>(ii) P and T as both have same number of valence electrons<br>(iii) Q (Formula of halide may be ignored) | ½ + ½<br>½ + ½<br>1 | 3 |
| | | | |
| Q9. | (i) Ductless glands;<br>• They pour their secretion directly into the blood stream<br>(ii) Thyroxine;<br>• To regulate the metabolism of carbohydrates, proteins and fats<br>(iii) Iodine is essential for the thyroid glands to make thyroxine hormone/ Iodine is an essential component of thyroxine hormone | ½<br>½<br>½<br>½<br>1 | |
| | OR | | |
| | • Central nervous System/ CNS – Brain and Spinal Cord<br>• Peripheral Nervous System/ PNS – Cranial nerve and spinal nerve<br>• By skull and vertebral column | 1<br>1<br>½ + ½ | 3 |
| | | | |
| Q10. | • Plants when stimulated (by environmental factors) release chemicals called hormones in specific parts.<br>• These diffuses to the neighboring part / area of action.<br>• If those cells recognize the information/ chemical, they bring about the desired change/ control and coordination.<br>• These hormones are Auxin, Cytokinome, Abscisic acid Gibberellins (any two)<br>• These hormones help the plant in coordination such as growth, cell division, inhibition of growth, flowering wilting of leaves. (any two) | ½<br>½<br>½<br>½<br>½ + ½ | 3 |
| Q11. | • Speciation: Formation of a new species from pre-existing ones.<br>• Four factors: (i) mutation (ii) natural selection (iii) genetic drift (iv) geographical isolation (v) variation (vi) gene flow (any four) | 1<br>½ x 4 | 3 |
| | **OR** | | |
| | • Fossil: the remains or impressions of dead and decayed plants and animals of remote past / preserved traces or impressions of living organisms of the past<br>• Two methods:<br>Carbon dating – By detecting the ratios of different isotopes of the same element in the fossil material | 1<br>½ + ½<br>½ + ½ | 3 |

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| | Excavation – By digging into earth. The fossils we find closer to the earth are more recent than the fossils we find in the deeper layers. | | |
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| Q12. | a) Hypermetropia<br>Two causes:<br>• The focal length of the eye lens is too long<br>• The eye ball becomes too small<br>b) Convex/ Converging<br>Focal length = 100/+2D = + 50 cm | ½<br>½ + ½<br><br><br>½<br>1 | 3 |
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| Q13 | • When a current carrying conductor is placed in a magnetic field, it experiences a force<br>• To reverse the direction of current through the armature after every half rotation.<br>• Electrical energy to mechanical energy. | 1<br>1<br>1 | 3 |
| | | | |
| Q14. | • A coil of wire having large number of turns is taken<br>• The ends of the coil are connected to a galvanometer<br>• Strong bar magnet is taken, and its north pole is moved towards a particular end of the coil<br>• The deflection of needle of the galvanometer changes when the coil is moved towards the north pole or away from the north pole of the magnet.<br>• When the coil is kept stationary with respect to the magnet, the deflection of the needle in of the galvanometer drops to 0 (zero).<br>(Or any other method) | ½<br>½<br>½<br>½<br><br><br>1 | 3 |
| | | | |
| Q15. | a) Methane /($CH_4$)<br>b) Two advantages:<br>Burns without smoke<br>More calorific value<br>Leaves no residue<br>Does not cause pollution (any two)<br>c) Concerned about cleanliness and environment, sense of togetherness, awareness about non-conventional sources of energy. (or any other) | 1<br><br><br><br>½ + ½<br>½ + ½ | 3 |
| | | | |
| Q16. | • Displacement reaction: A reaction in which more reactive element displaces a less reactive element from its salt solution.<br>Double displacement reaction: A reaction in which two ionic compounds react and two new compounds are formed by mutual exchange of ions.<br>• Examples:<br>$Fe + CuSO_4 \rightarrow FeSO_4 + Cu$ } Displacement reaction<br>$Zn + FeSO_4 \rightarrow ZnSO_4 + Fe$ }<br><br>$AgNO_3 + NaCl \rightarrow NaNO_3 + AgCl$ } Double displacement reaction<br>$Na_2SO_4 + BaCl_2 \rightarrow BaSO_4 + 2NaCl$ }<br>(or any other) | 1<br>1<br><br>½<br>½<br><br>1<br>1 | 5 |
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| Q17. | | **Metals** | **Non-metals** | | |
| | Physical Properties | (i) Malleable and ductile<br>(ii) Good conductor of heat and electricity | (i) Neither malleable nor ductile<br>(ii) Except graphite non-metals are bad conductors of heat and electricity | 1 x 2 | |
| | Chemical Properties | (i) Form basic or amphoteric oxides<br>(ii) Electropositive in nature<br>(iii) Displace hydrogen from dilute acids | (i) Form acidic or neutral oxides<br>(ii) Electronegative in nature<br>(iii) Does not displace hydrogen from dilute acids<br>(or any other property) | 1 x 3 | 5 |
| | **OR** | | | | |
| | a) P: Nitrogen/ N, Q: Ammonia/ $NH_3$, R: Nitric Oxide/ Nitrogen Dioxide $NO/NO_2$, S: Nitric Acid/ $HNO_3$ | | | ½ x 4 | |
| | $N_2+3H_2 \rightarrow 2NH_3$; | | | | |
| | $N_2+O_2 \rightarrow 2NO$ | | | | |
| | $O_2 + NO_2 + H_2O \rightarrow 2HNO_3$ | | | | |
| | Any two equations | | | 1 + 1 | |
| | b) $15^{th}$ group and $2^{nd}$ period | | | ½ + ½ | 5 |
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| Q18. | a) Fishes use oxygen dissolved in water for respiration. In air they are unable to respire through gills.<br>b) No, it will not remain healthy. It will soon die because vaseline covers the stomata. Hence exchange of gases and transpiration stops.<br>c) Photosynthesis is occurring.<br>Reason: During the day the rate of respiration is almost equal to the rate of photosynthesis. So, $CO_2$ released during respiration is taken up during photosynthesis. | | | 1<br>1 + 1<br>1<br>1 | 5 |
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| Q19. | Role of:<br>(i) Testis: To produce male gamete (sperms) and also male sex hormone – testosterone.<br>(ii) Seminal Vesicle: To secrete seminal fluid and help in mobility of sperms.<br>(iii) Vas deferens: To transport sperms formed in testis to urethra.<br>(iv) Urethra: Provides common passage to both sperms and urine.<br>(v) Prostate Gland: Its secretion provides nutrition to sperms. | | | ½ + ½<br>½ + ½<br>1<br>1<br>1 | 5 |
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| Q20. | a) Spherical lens: An optical device made up of a transparent medium bounded by two surfaces of unequal curvatures.<br>Two types: (i) Convex/ Converging (ii) Concave/Diverging<br>i) Principal axis: An imaginary straight line passing through the pole and centre of curvature of a lens<br>ii) Optical centre: The central point of a lens.<br>iii) Aperture: The effective diameter of the circular outline/ reflecting | | | ½<br>½, ½ | |

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| | surface of spherical lens.<br>(Explanation through diagram also acceptable)<br>b) The object is at 2F of a Convex lens<br>$\therefore 4f = 60$ cm<br>$\Rightarrow 2f = 30$ cm<br>$\Rightarrow f = 15$ cm<br>Inverted / Real image, Same size | ½ x 3<br><br>½<br><br><br>1<br>½ | |
| | **OR** | | |
| | (i) Pole: The centre of the reflecting surface of a spherical mirror.<br>(ii) Center of curvature: Centre of the hollow sphere of which mirror is a part.<br>(iii) Principal axis: An imaginary straight line passing through the pole and centre of curvature of the mirror<br>(iv) Focal length: The distance between the pole and the principal focus | <br><br><br>½ x 4 | |
| | Here $h_1 = 4$ cm; $f = -10$ cm; $v = -15$ cm<br><br>Mirror formula<br>$\frac{1}{v}+\frac{1}{u}=\frac{1}{f} \rightarrow \frac{1}{v}=\frac{1}{f}-\frac{1}{u}$<br><br>$\Rightarrow v=\frac{uf}{u-f}=\frac{-15\text{ cm}\times -10\text{ cm}}{-15\text{ cm}-(-10\text{ cm})}$<br><br>$= -30$ cm<br><br>$\frac{h_2}{h_1}=\frac{-v}{u}$ $h_2=-\frac{v}{u}\times h_1 = \frac{-30\text{cm}}{-15\text{ cm}}\times 4\text{ cm} = -8\text{ cm}$ | ½<br><br>½<br><br>½<br><br>½<br><br>½ + ½ | 5 |
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| Q21. | (a) Derivation of the expression $R_s = R_1 + R_2 + R_3$<br>In series combination of resistors total potential difference across the combination is equal to the sum of potential difference across the individual resistor<br>$V = V_1 + V_2 + V_3$<br>Applying Ohms law $V = IR$<br>$V_1 = IR_1$<br>$V_2 = IR_2$<br>$V_3 = IR_3$<br>$IR_s = IR_1 + IR_2 + IR_3$<br>$R_s = R_1 + R_2 + R_3$ | | |
| | (b)<br><br>$\text{Current} = \frac{\text{Wattage}}{\text{Voltage}} = \frac{1-\text{kW}}{220\text{ V}} = \frac{1000\text{ W}}{220\text{ V}} = 4.54\text{ A}$<br><br>$\therefore$ Fuse of 5A rating is most appropriate. because for 3A it may burn while for 7A, the overloading of current may take place. | ½ x 4<br><br><br>½, ½ | 5 |
| | SECTION – B | | |
| Q22. | Solution A: basic Solution B: Acidic<br>Solution A has pH > 7, solution B has pH < 7. | ½, ½<br>½, ½ | 2 |

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| Q23. | • Brisk effervescence • Evolution of colourless / odorless gas<br>• $CO_2$ • Lime water turns milky when the gas is passed through it. | ½, ½<br>½, ½ | 2 |
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| Q24. | Glycerine – Keeps the material wet / prevents drying of the material<br>Safranin – Gives colour to the stomata/, makes it distinct | 1<br>1 | 2 |
| | | | |
| Q25. | • Binary fission<br>• Elongation of the nucleus<br>• Division of cytoplasm<br>• Formation of two daughter cells | ½<br>½<br>½<br>½ | 2 |
| | | | |
| Q26. | Four precautions:<br>(i) Mark boundary<br>(ii) Angle incidence range ($30^0 – 55^0$)<br>(iii) Distance between two pins – more than 5 cm<br>(iv) Use sharp pencil to draw rays | ½ x 4 | 2 |
| | **OR** | | |
| | Two characteristics: | | |
| | **I Case** / **II Case** | | |
| | (i) Inverted image / (i) Inverted image<br>(ii) Diminished image / (ii) Enlarged image<br>(iii) Sharp and bright image / (iii) Comparatively less brighter image | | |
| | Any two | ½ x 4 | 2 |
| | | | |
| Q27. | Least count = 100 mA / 20 = 5 mA<br>Zero error = + 3 x 5 mA = + 15 mA<br>Value of current = 300 mA + 15 x 5 mA – (+15 mA) = 360 mA. | ½<br>½<br>1 | 2 |