

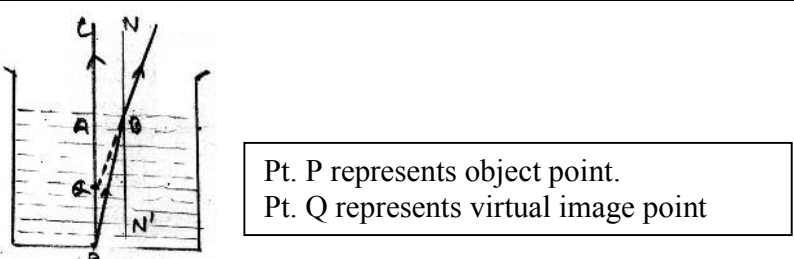
BOARD OF SECONDARY EDUCATION, MANIPUR  
SCORING KEY FOR H.S.L.C. EXAMINATION 2020  
Subject & Paper : **SCIENCE**

Sl. No.	Key : SECTION – A (Chemistry)	Mark for each point	Total Marks
1	Equation : $2\text{NaOH} + \text{Zn} \rightarrow \text{Na}_2\text{ZnO}_2 + \text{H}_2$	1	1
2	Mg (OH)Cl or any other example.	1	1
3		1	1
4	Plaster of Paris is converted to gypsum when treated with water.	1	1
5	Both types of bonds are formed by sharing of electrons. In case of covalent it is mutual sharing but in case of co-ordinate bond the shared pair of electrons is contributed by one of the combining atoms (donor) and the other atom acts as acceptor. So co-ordinate bond may be considered as a special type of covalent bond. Any one example.	1  1	2
6	Ag is below Fe in the activity series. So Fe displaces Ag from solution and greenish ferrous nitrate solution is formed.  $2\text{AgNO}_3(\text{aq}) + \text{Fe}(\text{s}) \rightarrow \text{Fe}(\text{NO}_3)_2(\text{aq}) + 2\text{Ag}(\text{s})$ (Colourless)                      (Light Green)	1  1	2
7	Diagram Labelling	1 1	2
8	$\text{C}_2\text{H}_5\text{OH} \xrightarrow[\text{-H}_2\text{O}]{\text{conc. H}_2\text{O}_4, 170^\circ\text{C}} \text{CH}_2 = \text{CH}_2 \xrightarrow{\text{Br}_2} \begin{array}{c} \text{CH}_2 - \text{CH}_2 \\   \quad   \\ \text{Br} \quad \text{Br} \end{array}$ <p style="text-align: center;"> <span style="margin-right: 100px;">← (First Step)</span> <span>(Second Step) →</span> </p>	1  1	2
9	Detergents form lather even with hand water. <u>Formation of miscelles or diagram of miscell</u> Soap is Na Salt of long chain fatty acids. It has two ends; one water soluble ionic end and the other fat or oil soluble hydrocarbon end. Dirts are oily in nature. So dirts are removed by dissolving in the hydrocarbon end oil (dirts).	1 1  1	3
10	In displacement reaction an ion of the compound is replaced by another more reactive element, but in double displacement reaction both cation and anions of the reacting species are exchanged. Example: $\text{H}_2\text{SO}_4 (\text{dil}) + \text{Zn} \rightarrow \text{ZnSO}_4 + \text{H}_2$ $\text{AgNO}_3(\text{aq}) + \text{NaCl}(\text{aq}) \rightarrow \text{AgCl}(\text{s}) + \text{NaNO}_3 (\text{aq})$	1  1 1	3

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11	Reduction of metal oxide in fused state by carbon to free metal is called smelting. <u>Smelting roasted iron oxide</u> $\text{Fe}_2\text{O}_3 + 3\text{C}(\text{s}) \rightarrow 2\text{Fe}(\text{s}) + 3\text{CO}(\text{g})$ $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe}(\text{s}) + 3\text{CO}_2(\text{g})$	1  1 1	3
12	Modern Periodic table is a better table because it is based on a more fundamental property of elements. i.e. Atomic no. (i) According to Modern Periodic Law, the valency of elements depends on their valence electrons. In a period the valency is either equal to the number of valence electrons ( 1 to 4 ) or ( 8 – number of valence electrons) when the number of valence electrons is 5 or more. In a group, the valence electron remains the same and hence valence is same. (ii) The atomic size decreases from left to right in a period. With increase in electron number in the valence shell and proton number, the nuclear charge attracts the electrons with stronger force. As a result the same valence shell contracts in size. In a group, with increase in atomic number the shell number increases and hence size increases.  <u>Atomic size:</u> Atomic size decrease from left to right along a period but on moving down a group it increases. Explain in a period and group with reference to electronic configuration.	1  2  2	5
<b>Section – B (Physics)</b>			
13	$\Omega\text{m}$ (Ohm meter)	1	1
14	A freely suspended magnet always points in the south and north direction.	1	1
15	Select any one point of difference: 1. It does not cause air pollution. 2. Renewable source	1 1	1 1
16	By placing a piece of magnetic material inside a solenoid, it becomes an electromagnet.	1	1
17	We have, $\frac{1}{R^1} = \frac{1}{R/4} + \frac{1}{R/4} + \frac{1}{R/4} + \frac{1}{R/4}$ $= \frac{4}{R} + \frac{4}{R} + \frac{4}{R} + \frac{4}{R}$ $= \frac{16}{R}$ $\Rightarrow \frac{R}{R^1} = 16$	2	2

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18	<p>The eye suffering from this defect cannot see clearly the far of objects but can see distinctly the objects nearby.</p> <p>The defects are due to</p> <ol style="list-style-type: none"> <li>The eyeball is elongated.</li> <li>The eye lens becomes thicker making its normal focal length too short.</li> </ol>	1  ½  ½	2
19	In the cold polar region the optical density of the different layers of air decreases as we go higher and higher. Hence rays from the object on the surface of the sea after constructive refraction are internally reflected back from a layer above. Hence the object is seen hanging in the sky.	2	2
20		2	2
21	<p>Soln.</p> <p>i) <math>I = \frac{V}{R} = \frac{250V}{500\Omega} = 0.5A</math></p> <p>ii) The Power, <math>P = VI = 250 \times 0.5W = 125W</math></p> <p>iii) Heat Produced, <math>H = I^2 \times R \times t</math></p> $= (0.5)^2 \times 500 \times 30$ $= 0.25 \times 500 \times 30$ $= 3750J$	1  1  1	3
22	If the two magnetic field lines cancel each other, there will be two magnetic field directions at the point of intersection. It is impossible case. So, two magnetic field lines never intersect each other.	3	3
23	<p>Select any three points.</p> <ol style="list-style-type: none"> <li>Wind energy farms can be established at selected places.</li> <li>It requires large area of land</li> <li>There should be back up facilities like storage cells.</li> <li>Initial cost of establishment of the farm is quite high.</li> <li>Since the equipments are exposed outside, they need proper maintenance.</li> </ol>	1x3	3
24	<p>Diagram of A.C. generator.</p> <p>Working of A.C. generator</p> <ol style="list-style-type: none"> <li>Description of 1<sup>st</sup> half cycle</li> <li>Description of 2<sup>nd</sup> half cycle</li> <li>Description of Frequency</li> </ol>	1  1½  1½  1	5

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<b>SECTION – C ( BIOLOGY)</b>			
25	It is a technique of propagation of plants from cells, tissues or organs by using the methods of tissue culture.	1	1
26	Water is excreted in the form of water vapour during day time and in liquid form during night time.	1	1
27	In epigeal germination, the plumule and cotyledons emerge above ground. Ex. castor, sunflower etc. In hypogeal germination, the cotyledons remain below ground and the plumule emerges, Ex. maize, gram etc.	1	1
28	Non-biodegradable substances are slowly broken down in the environment by physical processes like heat and pressure.	1	1
29	Cytokinins stimulate cell division and also cause the enlargement of cells and promotes seed germination. Ethylene can prevent the longitudinal elongation of stem and root but is associated with radial elongation of tissues and can hasten post harvest maturation of fruits.	1 1	2
30	Tankas (Underground tanks) Khadins (Embankments)	1 1	2
31	i. Garden pea has a number of contrasting visible characters or traits. ii. The petals of garden pea flower encloses the reproductive structures so self fertilization is a rule. It helps in performing cross pollination between parents having desirable characters. Or any other point.	1 1	2
32	The depletion of ozone layer reduces the absorption of ultraviolet (UV) radiation from the sun and allows harmful UV rays to reach the earth. UV radiation can cause cataract of eye, skin cancer or melanoma etc. to human beings.	1 1	2
33	Drawing- Labelling -	1 1	2

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34	<p>The process of gradual change in living organisms from one form of life to another is called organic evolution.</p> <p>Fossilization or formation of fossils involves the conservation of an organism or its parts into a hard structures or rocks.</p> <p>Early fossils are present in the bottom of rocks while the recent fossils are found in the upper layer of the rock. Or any other point.</p>	1x3	3		
35	Any three of the followings.				
	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><u>Photosynthesis</u></p> <p>i. Carbondioxide is absorbed with the release of oxygen.</p> <p>ii. It takes place inside the chloroplast.</p> <p>iii. It requires light.</p> <p>iv. It occurs in plant cells having green pigments.</p> <p>v. Any other points.</p> </td> <td style="width: 50%; vertical-align: top;"> <p><u>Respiration</u></p> <p>i. Oxygen is absorbed with the release of carbondioxide .</p> <p>ii. It takes place inside the mitochondria.</p> <p>iii. It does not require light.</p> <p>iv. It occurs in all living cells.</p> <p>v. Any other point</p> </td> </tr> </table>	<p><u>Photosynthesis</u></p> <p>i. Carbondioxide is absorbed with the release of oxygen.</p> <p>ii. It takes place inside the chloroplast.</p> <p>iii. It requires light.</p> <p>iv. It occurs in plant cells having green pigments.</p> <p>v. Any other points.</p>	<p><u>Respiration</u></p> <p>i. Oxygen is absorbed with the release of carbondioxide .</p> <p>ii. It takes place inside the mitochondria.</p> <p>iii. It does not require light.</p> <p>iv. It occurs in all living cells.</p> <p>v. Any other point</p>	1x3	3
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36	<p>Any three of the followings.</p> <p>i. Exchange of cytoplasmic and nuclear materials by breaking the surface membrane through opposite oral grooves in <i>Paramecium</i>.</p> <p>ii. In hermaphrodite animals like <i>Hydra</i> and tapeworm, the male and female gonads mature at different times.</p> <p>iii. In earthworms, sperms are exchanged between two individuals by copulation.</p> <p>iv. In insects, it occurs by copulation between male and female partners. The fertilized eggs undergo metamorphosis to become a complete young individual.</p>	1x3	3		
37	<p>Any five of the following:</p> <p>i. Protection of natural habitats through controlled, limited exploitation of species.</p> <p>ii. Establishing Biosphere reserves for plant and animal species.</p> <p>iii. Improving the existing protected areas as Sanctuaries, National parks etc.</p> <p>iv. Imposing restrictions on export of rare plant and animal species and their products.</p> <p>v. Imposing protection through legislation.</p> <p>vi. Educating public for environmental protection at all levels of education.</p> <p>vii. Any other point</p>	1x5	5		