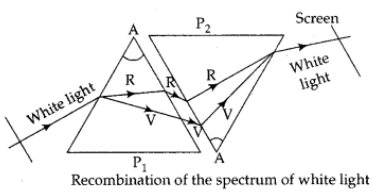
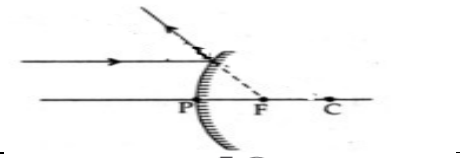
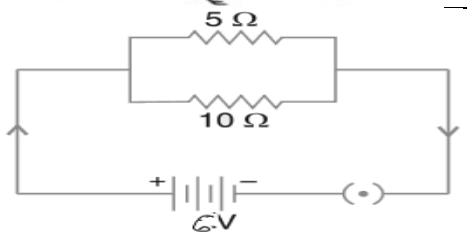
MARKING SCHEME

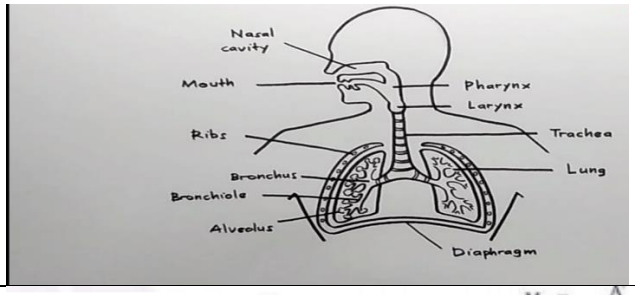
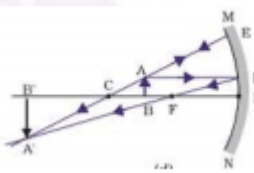
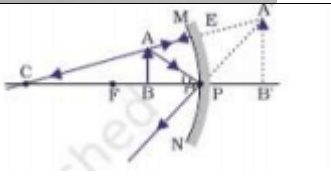
SAMPLE PAPER 2- 2020-21
CLASS X (SCIENCE)

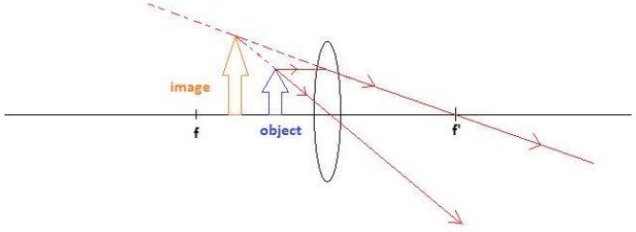
Qn.No	VALUE POINTS	MARKS	Total
1	HCl OR Decomposition reaction.	1	1
2	P and R	½ + ½	1
3	(c) Potassium and magnesium	1	1
4	$\rho_1 = \rho_2$ $\therefore (R_1.A_1)/L_1 = (R_2.A_2)/L_2$ $\therefore (R.A)/l = (0.5R \times A_2)/2.5l$ **$A_2 = 5A$**	1	1
5	There is **no atmosphere** in space and hence light does not scatter	1	1
6	-0.5D OR A- Refractive index 1.33	1	1
7	 Recombination of the spectrum of white light	1	1
8		1	1
9	 OR 8Ω	1	1
10	Anal sphincter regulates removal of undigested waste through anus.	½ ½	1
11	Testes are located outside abdominal cavity as sperms need lower temperature for development. OR Fertilisation in humans takes place in the oviduct in the female body so it is said to be internal1	½ ½ ½ ½	1
12	Each step or level in a food chain is called a trophic level. OR	½ ½	1

<table>
<tr><td></td><td>Interconnected food chains are called food web.</td><td>1</td><td></td></tr>
<tr><td>13</td><td>To improve the chances of survival</td><td>1</td><td>1</td></tr>
<tr><td>14</td><td>Assertion is false but the reason is true.</td><td>1</td><td>1</td></tr>
<tr><td>15</td><td>A -Assertion is true and reason is the correct explanation
OR
D-Assertion is false but R is true.</td><td>1</td><td>1</td></tr>
<tr><td>16</td><td>C- Assertion is true but reason is false</td><td>1</td><td>1</td></tr>
<tr><td>17</td><td>i. C -Nephron
ii. b-Plasma proteins
iii. C -Nitrogenous waste
iv. B- reabsorption
v. C-Vein (any four)</td><td>1
1
1
1
1</td><td>4</td></tr>
<tr><td>18</td><td>(i) (c) Universal indicator solution
(ii) (c) more acidic
(iii) (d) B < C < A < D.
(iv) (c) A low pH value
(v) Lemon juice (any four)</td><td>1
1
1
1
1</td><td>4</td></tr>
<tr><td>19</td><td>i. a) virtual and magnified
ii. c) beyond 2f
iii. c) At infinity
iv. c) 10 cm
v. a) A convex lens has 4 dioptre power having a focal length 0.25 m
(any four)</td><td>1
1
1
1
1</td><td>4</td></tr>
<tr><td>20</td><td>i. a) Resistance
ii. d) 400 Ω
iii. c) Resistance will become half
iv. c) ohm
v. c) Length halved, Area doubled
(any four)</td><td>1
1
1
1
1</td><td>4</td></tr>
<tr><td></td><td>Section B
SHORT ANSWER QUESTIONS OF 2 MARKS</td><td></td><td></td></tr>
<tr><td>21</td><td><table><tr><td>BUDDING</td><td>FISSION</td></tr><tr><td>i)Offspring arises as outgrowth on parental body.</td><td>i)Offsprings are formed by division of the parental cell.</td></tr><tr><td>ii)Parent survives after budding.</td><td>ii)Parental cell does not exist after fission.</td></tr><tr><td></td><td></td></tr></table>OR
Amoeba divides through any plane as it does not have a definite shape whereas Paramecium divides through a specific plane as it has a definite shape</td><td>1x2(any one difference)
2</td><td>2</td></tr>
</table>

22	a)Salivary amylase helps in digestion of carbohydrates in buccal cavity/mouth b)Lipase-Fat digesting enzyme	1 1	2
23	(a) Chlorine has largest atomic radius because it has 3 shells, 2, 8, 7 Fluorine is most reactive as it is smallest in size and can gain electrons easily.	½ + ½ ½ + ½	2
24	$Al_2O_3 + 6HCl \rightarrow 2AlCl_3 + 3H_2O$ $Al_2O_3 + 2NaOH \rightarrow 2NaAlO_2 + H_2O$ Sodium aluminate OR $Na^{\cdot} \; :\dot{\underset{\cdot}{C}}l:$ They form bond by transfer of an electron. Na loses one electron to form Na+ ion whereas Cl gains one electron to form Cl- ion. The bond formed is ionic or electrovalent bond. $Na \rightarrow Na^+ + e^-$ 2,8,1 2,8 (Sodium cation) $Cl + e^- \rightarrow Cl^-$ 2,8,7 2,8,8 (Chloride anion) 	1 1 ½ ½ ½ ½	2
25	In the attached figure, it shows the combination of resistors R_1, R_2, R_3 and R_4. Here, R_3 and R_4 are in parallel. Let their equivalent is given by the formula as : $\frac{1}{R} = \frac{1}{R_3} + \frac{1}{R_4}$ $R = \frac{R_3 R_4}{R_3 + R_4}$ .....(1) Now, resistors R_1, R_2 and R are in series. Their equivalent resistance is given by the formula : $R_{eq} = R_1 + R_2 + \frac{R_3 R_4}{R_3 + R_4}$ $= 5+2+\frac{3\times6}{3+6}$ $=9\Omega$	 1 ½ ½	2
26	i. The object should be placed between 0 to 20cm from the pole of the mirror. ii. The image will be bigger than the object	1 1	2
	SHORT ANSWER QUESTIONS OF 3 MARKS		

27	Three methods of contraception are: -Mechanical method-use any device to prevent entry of sperm into female body. -Chemical method-Use of hormonal preparations that can prevent ovulation . -Surgical method-A portion of sperm duct or oviduct is surgically removed . OR i) POLLINATION: It is the transfer of pollen grains to stigma of a flower. FERTILISATION: It is the fusion of male and female gametes to form the zygote. ii)a-Petals b)Sepals	1x3 1x2 ½+1/2=1	3
28	i)Formation of ozone occurs as follows: $O_{2(g)} \xrightarrow{UV} O_{(g)} + O_{(g)}$ $O_{2(g)} + O_{(g)} \xleftrightarrow{UV} O_{3(g)}$ ii)Any two ways of disposal-recycling /reusing	 1x2 ½+1/2=1	3
29	i)Respiratory rate in aquatic organisms is higher than in terrestrial organisms. As they have to take oxygen dissolved in water and this is less compared to atmospheric oxygen. ii)Capillaries are the thinnest blood vessels as they are the blood vessels present in cells and help in exchange of materials at cellular level. iii)Trachea does not collapse when there is no air in it as it has rings of cartilage around it.	1 1 1	3
30	(i) In displacement reaction, more reactive metal can displace less reactive metal from its salt solution Eg:- $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$(Any one example) In double displacement reactions, two reactants exchange their ions to form two new compounds. Eg:- $NaOH + HCl \rightarrow NaCl + H_2O$(any one example) (ii) Sunlight	½ ½ ½ ½ 1	
31	Q-2, 8, 3 Valency-3 R- 2, 8, 5 Valency-3 Molecular formula-PS	½ + ½ ½ + ½ 1	3
32	(a) Cu (b) Fe $3Fe + 4H_2O\ (g) \rightarrow Fe_3O_4 + 4H_2$ (c) Mn $Mn + 2HNO_3 \rightarrow Mn(NO_3)_2 + H_2$	1 ½ ½ ½ ½	3

33	Scattering of light is the phenomenon by which a beam of light is redirected in many different directions when it interacts with a particle of matter. i. During Sunrise, the sun's rays have to pass through a larger distance in the atmosphere. Most of the blue and other shorter wavelengths are removed by scattering and only red light of longer wavelength enters our eye. Thus, at sunrise sky appears reddish. ii. Fine size particles in the atmosphere is more effective in scattering colours of shorter wavelengths.	1 1 1	3
	Long answer type 5 marks		
34	(i) HCl completely ionise in aqueous solution whereas acetic acid partially ionise in aqueous solution. HCl gives dark red colour with pH paper whereas acetic acid gives orange colour. (ii) Dry HCl gas does not form ions but HCl gives H+ and Cl- (iii) Sodium hydrogen carbonate $NH_3 + CO_2 + H_2O + NaCl \rightarrow NaHCO_3 + NH_4Cl$ It is used as an antacid(Any one use) OR $CaCO_3 + 2HCl \rightarrow CaCl_2 + H_2O + CO_2$ Lime water will turn milky. $Ca(OH)_2 + CO_2 \rightarrow CaCO_3 + H_2O$ If excess CO_2 is passed, the solution will become clear due to the formation of $Ca(HCO_3)_2$ which is soluble in water. $CaCO_3 + H_2O + CO_2 \rightarrow Ca(HCO_3)_2$	1 1 1 ½ 1 ½ 1 1 1 ½ + ½ 1	5
35	Glycolysis (In cytoplasm): Glucose → Pyruvate In a absence of Oxygen (Muscle tissue): Pyruvate → 2 Lactic acid + 2ATP (Energy)  	1/2x6 ½ x3 +1/2	5
36	 Real  Virtual	1½+1½	5

	f =+ 10 cm u = -10 cm => 1/f = (1/v)+(1/u) => 1/10 = 1/v+ 1/-10 =>1/v = (1/+10) - (1/-10) =>1/v = (1/10)+(1/10) =>1/v = 2/10 => v = 10/2 => v = +5 cm	½ ½	
	OR i. a) The power of a lens is defined as the reciprocal of the focal length. b) Light rays that are parallel to the principal axis of a concave mirror converge at a specific point on its principal axis after reflecting from the mirror. This point is known as the principal focus of the concave mirror.	1 1	
	ii. a. 1/f=1/v- 1/u b. 1/f=1/v+1/u	½+½	
	iii. Given: u=-10cm $f = 15\ m$ <u>Now the distance of the image formed:</u> 1/f=1/v- 1/u 1/15=1/v+1/10 v=-30cm negative sign denotes that the image is formed on the same side of the object and is virtual erect and magnified  	2	

Prepared by : The Department of Science 2020 -21
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