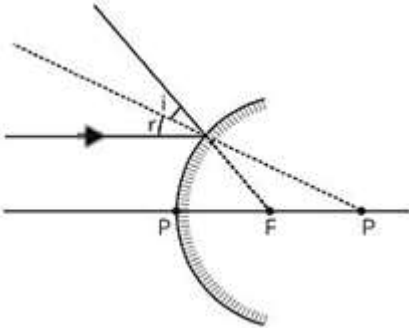


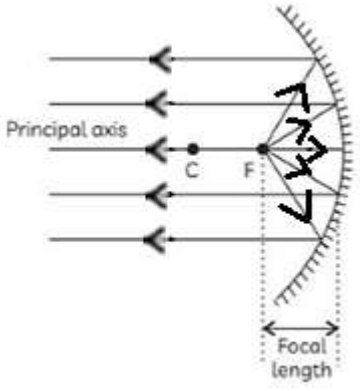
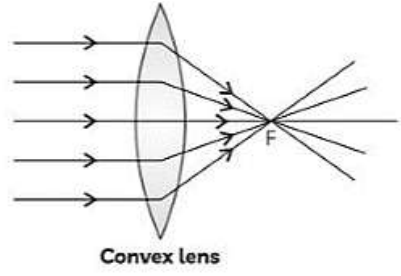
## Sample Question Paper - 1 (TERM - I)

### Solutions

<b>Ans 1</b>	(b) Yellow precipitate was formed <b>Explanation:</b> When potassium iodide solution is added to lead nitrate solution, a yellow coloured precipitate of lead iodide is formed. $\text{Pb}(\text{NO}_3)_2(\text{aq}) + 2\text{KI}(\text{aq}) \rightarrow \text{PbI}_2(\text{s}) + 2\text{KNO}_3(\text{aq})$
<b>Ans 2</b>	(b) Hydrogen <b>Explanation:</b> Hydrogen gas is evolved when dilute sulphuric acid is added to zinc granules. The type of reaction taking place is single displacement reaction. $\text{Zn}(\text{s}) + \text{H}_2\text{SO}_4(\text{aq}) \rightarrow \text{ZnSO}_4(\text{aq}) + \text{H}_2(\text{g})$
<b>Ans 3</b>	(a) less than 7 <b>Explanation:</b> The pH of the gastric juices released during digestion is less than 7, since they are acidic in nature.
<b>Ans 4</b>	(b) $3\text{Fe}(\text{s}) + 4\text{H}_2\text{O}(\text{g}) \rightarrow \text{Fe}_3\text{O}_4(\text{s}) + 4\text{H}_2(\text{g})$ <b>Explanation:</b> A balanced chemical equation has an equal number of atoms of different elements in the reactants and products in accordance with the law of conservation of mass.
<b>Ans 5</b>	(a) Water < Acetic acid < Hydrochloric acid <b>Explanation:</b> The solution of HCl will have more number of H <sup>+</sup> ions as HCl completely dissociates in water. Acetic acid partially dissociates in water to give less number of H <sup>+</sup> ions. Water is considered as neutral. It contains equal number of H <sup>+</sup> and OH <sup>-</sup> ions.
<b>Ans 6</b>	(c) Double Displacement Reaction <b>Explanation:</b> In this the exchange of ions takes place between lead nitrate and potassium iodide, so it is considered as double displacement reaction. $\text{Pb}(\text{NO}_3)_2 + 2\text{KI} \rightarrow \text{PbI}_2 + 2\text{KNO}_3$

<b>Ans 7</b>	<p>(b) Parent Acid: <math>\text{H}_2\text{CO}_3</math>  Parent Base: <math>\text{Ca}(\text{OH})_2</math></p> <p><b>Explanation:</b> <math>\text{H}_2\text{CO}_3 + \text{Ca}(\text{OH})_2 \rightarrow \text{CaCO}_3 + 2\text{H}_2\text{O}</math></p> <p>Therefore, parent acid and parent base for the formation of calcium carbonate is <math>\text{H}_2\text{CO}_3</math> and <math>\text{Ca}(\text{OH})_2</math> respectively.</p>
<b>Ans 8</b>	<p>(c) absorb moisture from the gas</p> <p><b>Explanation:</b> Calcium chloride is used as an absorbent in the guard tube while hydrogen chloride is being formed on a humid day as it can absorb the moisture present in the air.</p>
<b>Ans 9</b>	<p>(c) To verify the law of conservation of mass.</p> <p><b>Explanation:</b> We need to balance chemical equations to satisfy the law of conservation of mass in chemical reactions. This is done by making the number of different types of atoms equal on both the sides of an equation.</p>
<b>Ans 10:</b>	<p>(b) It is a good conductor of electricity in its pure solid state.</p> <p><b>Explanation:</b> The electronic configuration of X is 2,8,1 i.e. it is 'Na'. The electronic configuration of Y is 2,8,7 i.e. it is chlorine 'Cl'. Compound 'NaCl'. It is not a good conductor of electricity, until it is melted.</p>
<b>Ans 11</b>	<p>(c) If one kidney is removed then another kidney takes the charge.</p>
<b>Ans 12</b>	<p>(d) Iodine</p> <p><b>Explanation:</b> Iodine is a non-metal, which has lustre. Non-metals are the elements, which do not possess, lustre, do not conduct heat and electricity and are neither malleable nor ductile but are brittle.</p>
<b>Ans 13</b>	<p>(b) The cup shape structure is Bowman's capsule that remains in contact with the glomerulus.</p>
<b>Ans 14</b>	<p>(d) Liver secretes bile juice and pancreas secretes pancreatic juice</p>
<b>Ans 15</b>	<p>(d) Larynx is found at the beginning and then it bifurcates into bronchi and further into bronchioles.</p>

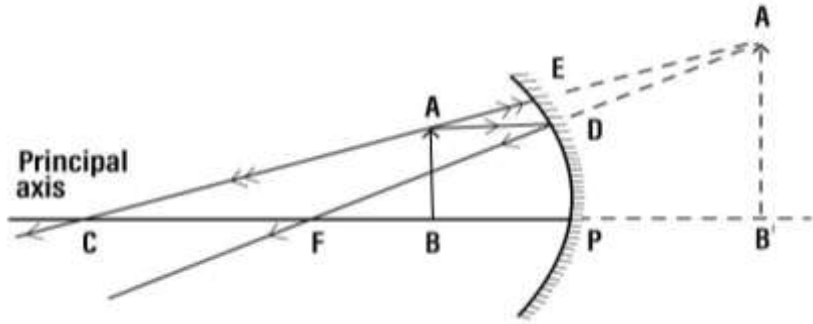
<b>Ans 16</b>	(c) Thrombocytes or blood platelets are the cells that initiate the process of blood clotting.
<b>Ans 17</b>	<p>(c) Appear to diverge from F</p> <p><b>Explanation:</b> A ray of light parallel to the principal axis appears to diverge from the principal focus F after reflection from a convex mirror.</p>  <p>The diagram shows a convex mirror with its principal axis. A horizontal ray with an arrow pointing right is parallel to the principal axis. It strikes the mirror at a point. A dashed line representing the normal is drawn at that point. The angle of incidence is labeled 'i'. The reflected ray is shown as a dashed line that appears to originate from the principal focus 'F' behind the mirror. Other points 'P' are marked on the principal axis to indicate the pole and center of curvature.</p>
<b>Ans 18</b>	<p>(b) less than one</p> <p><b>Explanation:</b> In medium B, light ray bends away from normal. It indicates, medium B is optically rarer than medium A. Thus, speed of light in medium B is more than in medium A.</p> $\text{Refractive index } ({}_A n_B) = \frac{v_A}{v_B}$ <p>Since <math>v_A &lt; v_B</math></p> $\therefore {}_A n_B < 1$
<b>Ans 19</b>	<p>(d) Diminished and virtual</p> <p><b>Explanation:</b> Convex mirror always form virtual and diminished image irrespective of position of the object in front of mirror.</p>
<b>Ans 20</b>	<p>(d) both (a) and (b)</p> <p><b>Explanation:</b> Planets do not twinkle because:</p> <ol style="list-style-type: none"> <li>(1) Planets are not a source of light. Instead, they reflect low intensity light reaching them.</li> <li>(2) They are also closer to the Earth than the distant stars. Hence, the shift due to atmospheric refraction is smaller.</li> <li>(3) As the planets are closer, planets appear larger in comparison to the stars. Hence, the shift is not enough for the planets to twinkle.</li> </ol>
<b>Ans 21</b>	(c) The light of different colours have different speed in a medium.

	<p><b>Explanation:</b> A prism works because the different colours of light travel at different speeds inside the glass. Because the colours of light travel at different speeds, they get bent, by different amounts and come out all spread out instead of mixed up.</p>
<p><b>Ans 22</b></p>	<p>(a): As, <math>\mu^2 = \frac{\sin i}{\sin r}</math></p> $\frac{\sin 45^\circ}{\sin 30^\circ} = \frac{1/\sqrt{2}}{1/2} = 1.41$
<p><b>Ans 23</b></p>	<p>(a) Dispersion occurs at point A  <b>Explanation:</b> At point A, dispersion occurs while at point B internal reflection occurs.</p>
<p><b>Ans 24</b></p>	<p>(a) Concave mirror as well as convex lens.  <b>Explanation:</b> When a parallel beam of light from a point source is incident on a concave mirror, the rays converge at the focus after reflection from the mirror.</p>  <p>When a parallel beam of light passes through a convex lens, the rays also converge at the principal focus after refraction from the lens.</p> 
<p><b>Ans 25</b></p>	<p>(c) Step 1 : Endothermic  Step 2 : Exothermic</p>

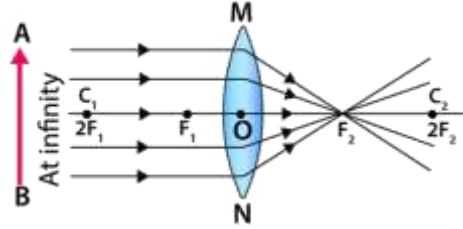
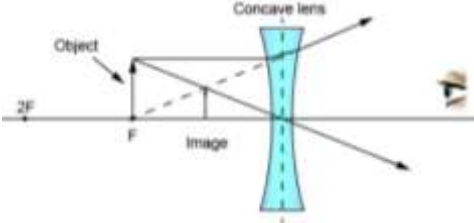
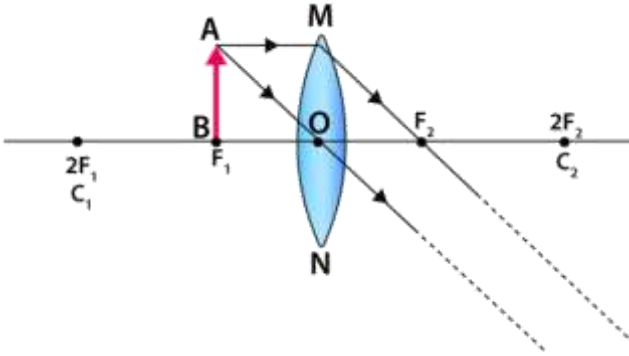
	<p><b>Explanation:</b> When limestone (<math>\text{CaCO}_3</math>) is heated, it decomposes to form calcium oxide (marked as X) and carbon dioxide: <math>\text{CaCO}_{3(s)} + \text{Heat} \rightarrow \text{CaO}_{(s)} + \text{CO}_{2(g)}</math> This is an endothermic reaction as heat is absorbed in this case.</p> <p>When calcium oxide is dissolved in water, it forms slaked lime, which is an exothermic reaction as heat is evolved during this process.</p> $\text{CaO}_{(s)} + \text{H}_2\text{O}_{(l)} \rightarrow \text{Ca(OH)}_{2(aq)} + \text{Heat}$
<b>Ans 26</b>	<p>(b) turned green and a coating was formed on the nail</p> <p><b>Explanation:</b> The solution becomes green colour due to the displacement of copper from copper sulphate.</p> $\text{CuSO}_4 + \text{Fe} \text{ gives } \text{FeSO}_4 + \text{Cu}$ <p>Reddish brown deposit of Cu is seen on iron nail.</p>
<b>Ans 27</b>	<p>(d) (ii) and (iv)</p> <p><b>Explanation:</b> In physical change, no new substance is formed whereas in a chemical change a new substance(s) is/are formed.</p>
<b>Ans 28</b>	<p>(d) Fe (III) chloride and hydrogen gas</p> <p><b>Explanation:</b> <math>2\text{Fe} + 6\text{HCl} \rightarrow 2\text{FeCl}_3</math> (Iron (III) chloride) + <math>3\text{H}_2</math></p>
<b>Ans 29</b>	<p>(b) Bluish-green</p> <p><b>Explanation:</b> Blue-green colour of solution is due to the formation of copper (II) chloride.</p> $\text{CuO} + 2\text{HCl} \rightarrow \text{CuCl}_2 + \text{H}_2\text{O}$
<b>Ans 30</b>	<p>(d) Combustion of Liquefied Petroleum Gas (LPG)</p> <p><b>Explanation:</b> Combustion of Liquefied Petroleum Gas (LPG) is a chemical change since it burns in oxygen to give <math>\text{CO}_2</math>, <math>\text{H}_2\text{O}</math> and heat. The changes, which are accompanied by change in composition and chemical properties of the original substance there by forming new substances, are called chemical changes.</p>
<b>Ans 31</b>	<p>(c) A is true but R is false</p>

<b>Ans 32</b>	(d) A is False but R is true
<b>Ans 33</b>	(c) A is true but R is false.
<b>Ans 34</b>	(b) Both A and R are true and R is not the correct explanation of A.
<b>Ans 35</b>	(c) $\text{Fe}_3\text{O}_4$ <b>Explanation:</b> $3\text{Fe (s)} + 4\text{H}_2\text{O (g)} \rightarrow \text{Fe}_3\text{O}_4 \text{ (s)} + 4\text{H}_2 \text{ (g)}$
<b>Ans 36</b>	(b) Blood in the arteries travel with the great pressure hence they have elastic but thick walls.
<b>Ans 37</b>	(d) The palisade mesophyll cell (2) and guard cell (4) contain chloroplasts that absorbs sunlight. Most of the chloroplasts are concentrated in the palisade cells to absorb maximum amount of sunlight required for photosynthesis.
<b>Ans 38</b>	(b) Guard cells absorb water and swell up and get opened. Thus they regulate the process of transpiration.
<b>Ans 39</b>	(c) The speed of light in air > the speed of light in water > the speed of light in glass. <b>Explanation:</b> The speed of light in a medium is inversely proportional to the refractive index of the medium as refractive index $n = \frac{c}{v}$ . where c is the speed of light in vacuum and v is the speed of light in the given medium. Out of the three media given, glass has the highest refractive index (1.52) whereas air has the least refractive index (1.003). Therefore, speed of Light in air is the greatest followed by that in water and then in glass.
<b>Ans 40</b>	(b) $0^\circ$ <b>Explanation:</b> At the point O, the incident light, does not suffer any refraction. That is, the incident ray is incident normally on the glass. As angle of incidence is the angle between the incident ray and normal at the point of incidence, the angle of incidence = $0^\circ$ .
<b>Ans 41</b>	(a) Self explanatory
<b>Ans 42</b>	(b) Capillaries connect arteries and veins.

<b>Ans 43</b>	<p>(b) (ii)</p> <p><b>Explanation:</b> When white light is incident on a prism, it splits into its component colours VIBGYOR. The colour of sky, namely blue, will be seen as third colour from the top of the spectrum if the prism is inverted as shown in figure (ii).</p>
<b>Ans 44</b>	<p>(c) concave lens of focal length - 25 cm</p> <p><b>Explanation:</b></p> $P = -4D$ $P = \frac{100}{f(\text{cm})}$ $f(\text{cm}) = \frac{100}{p}$ $= \frac{100}{-4} = -25 \text{ cm}$ <p>(Negative focal length means concave lens. Concave lens of focal length -25 cm.</p>
<b>Ans 45</b>	<p>(d) centre of curvature of mirror</p> <p><b>Explanation:</b> Given focal length of concave mirror, <math>f = -20 \text{ cm}</math> Distance of object from concave mirror, <math>r = -40 \text{ cm}</math> From the mirror formula</p> $\frac{1}{u} + \frac{1}{v} = \frac{1}{f}$ $\Rightarrow \frac{1}{-40} + \frac{1}{v} = \frac{1}{-20}$ $\frac{1}{v} = \frac{1}{-20} + \frac{1}{40}$ $= \frac{-2 + 1}{40} = \frac{-1}{40}$ $v = -40$
<b>Ans 46</b>	<p>(b) - 54 cm</p> <p><b>Explanation:</b> size of object, <math>o = +7 \text{ cm}</math> distance of object, <math>u = -27 \text{ cm}</math> focal length of concave mirror, <math>f = -18 \text{ cm}</math></p>

	<p>let us take size of image = I</p> <p>so, mirror formula is</p> $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$ <p>so, putting values of u and v,</p> $\frac{1}{v} = \frac{1}{-18} - \frac{1}{-27}$ $\frac{1}{v} = \frac{1}{-54}$ $v = -54 \text{ cm}$ <p>so, image is formed on object side only.</p>
<b>Ans 47</b>	<p>(b) Virtual, erect and enlarged</p> <p><b>Explanation:</b> Here, the focal length = <math>\frac{R}{2} = 15 \text{ cm}</math> and the object is placed at 10 cm or between the pole and focus of the concave mirror. Therefore, image will be virtual, erect and enlarged or magnified.</p> 
<b>Ans 48</b>	(b) X, Y, Z
<b>Ans 49</b>	(d) all of these.
<b>Ans 50</b>	<p>(b) gives chlorine on exposure to atmosphere</p> $\text{CaOCl}_2 + \text{CO}_2 \rightarrow \text{CaCO}_3 + \text{Cl}_2$
<b>Ans 51</b>	(d) All of these.
<b>Ans 52</b>	(a) $\text{CaOCl}_2$
<b>Ans 53</b>	(c) Self explanatory
<b>Ans 54</b>	(B) Respiration utilises ATP and thus chemical energy
<b>Ans 55</b>	(a) Self explanatory



<b>Ans 56</b>	(a) Glucose gets broken down anaerobically in the cytoplasm and form pyruvic acid.
<b>Ans 57</b>	<p>(d): When an object is placed at infinity of convex lens, image will be formed at focus F.</p> 
<b>Ans 58</b>	<p>(B): Virtual and erect image is formed, when object is placed at focus of the concave lens.</p> 
<b>Ans 59</b>	<p>(c): When object is placed at focus of a convex lens, highly enlarged or magnified image is formed.</p> 
<b>Ans 60</b>	(b): When an object is placed at distance 2F in front of a convex lens, then the image formed is at a distance 2F on the other of the lens.

