



S.NO	SECTION -A
1	Define catenation.
2	How does valency of an element vary across a period?
3	<p>When we enter a dark room coming from outside, immediately the things inside the room do not appear clear to our eyes. This is because 1</p> <ul style="list-style-type: none"><li>i) pupils do not open at all in the dark.</li><li>ii) pupils take time to adjust.</li><li>iii) light travels slower in a darkroom.</li><li>iv) pupils open very quickly in the dark.</li></ul>
4	<p>The phenomena of light responsible for the working of the human eye is</p> <ul style="list-style-type: none"><li>i) reflection</li><li>ii) refraction</li><li>iii) power of accommodation</li><li>iv) persistence of vision</li></ul>
5	<p>1 When a 4V battery is connected across an unknown resistor there is a current of 100 mA in the circuit. The value of the resistance of the resistor is:</p> <ul style="list-style-type: none"><li>i) <math>4\Omega</math></li><li>ii) <math>40\Omega</math></li><li>iii) <math>400\Omega</math></li><li>iv) <math>0.4\Omega</math></li></ul>
6	<p>Unit of electric power may also be expressed as: 1</p> <ul style="list-style-type: none"><li>i) volt-ampere</li><li>ii) kilowatt-hour</li><li>iii) watt-second</li><li>iv) joule-second</li></ul>
7	<p>It was found that water from a river was contaminated with Coliform bacteria. Which one of the following pollutant might have got mixed with the water?</p> <ul style="list-style-type: none"><li>i) Fertilizer runoff</li><li>ii) Industrial waste</li></ul>

	<p>iii) Pesticides</p> <p>iv) Human faecal matter</p>
<b>8</b>	<p>Which one of the following stakeholders of forests causes the maximum damage to forest?</p> <p>i) People who live in or around the forest</p> <p>ii) The forest department of the government</p> <p>iii) The wildlife and native enthusiasts</p> <p>iv) The industrialists</p>
<b>9</b>	<p>Which one of the following green house gases is a contributor due to incomplete combustion of coal and petroleum?</p> <p>i) Oxides of nitrogen</p> <p>ii) Methane</p> <p>iii) Carbon monoxide</p> <p>iv) Carbon dioxide</p>
<b>10</b>	<p>Which of the following reactions is an endothermic reaction?</p> <p>i) Burning of coal.</p> <p>ii) Decomposition of vegetable matter into compost.</p> <p>iii) Process of respiration.</p> <p>iv) Decomposition of calcium carbonate to form quick lime and carbondioxide.</p>
<b>11</b>	<p>Identify the basic salt from the following salts:</p> <p>i) <math>Na_2CO_3</math></p> <p>ii) <math>NH_4Cl</math></p> <p>iii) <math>NaNO_3</math></p> <p>iv) <math>KCl</math></p>
<b>12</b>	<p>Elements P, Q, R and S have atomic numbers 11, 15, 17 and 18 respectively. Which of them are reactive non-metals?</p> <p>i) P and Q</p> <p>ii) P and R</p> <p>iii) Q and R</p> <p>iv) R and S</p>
<b>13</b>	<p>What prevents back flow of blood inside the heart during contraction</p> <p>a. Valves in heart</p>

	<p>b. Thick muscular walls of ventricles  c. Thin walls of atria  d. All of the above</p>	
14	<p>To demonstrate a displacement reaction the correct experimental set up is :  (a) Cu turnings in FeSO<sub>4</sub> solution (b) Fe in FeSO<sub>4</sub> solution  (c) Fe nails in CuSO<sub>4</sub> solution (d) all of these</p>	
15	<p>A concave mirror gives real, inverted and same size image if the object is placed  (a) At C (b) Beyond C (c) At F (d). At infinity</p>	
<b>SECTION-B</b>		
16	<p>(i) Write two observations when lead nitrate is heated in a test tube.  (ii) Name the type of reaction.  (iii) Write a balanced chemical equation to represent the above reaction.</p>	3
17	<p>A compound 'X' of sodium is used as an antacid and it decomposes on strong heating.  (i) Name the compound 'X' and give its chemical formula.  (ii) Write a balanced chemical equation to represent the decomposition of 'X'.  (iii) Give one use of compound 'X' besides antacid.</p>	3
18	<p>You are provided with 90 mL of distilled water and 10 mL of concentrated sulphuric acid to prepare dilute sulphuric acid.  (i) What is the correct way of preparing dilute sulphuric acid? Give reason.  (ii) How will the concentration of H<sub>3</sub>O<sup>+</sup> ions change on dilution?</p>	
19	<p>Two elements X and Y have atomic numbers 12 and 16 respectively. To which period the modern periodic table do these two elements belong? What type of bond will be formed between them and why? Also give the chemical formula of the compound formed.</p>	
20	<p>(i) Create a terrestrial food chain depicting four trophic levels  (ii) Why do we not find food chains of more than four trophic levels in nature?  OR  How will you create an artificial aquatic ecosystem, which is self-sustainable?</p>	
21	<p>Explain the processes of aerobic respiration in mitochondria of a cell and an aerobic respiration in yeast and muscle with the help of word equations.</p>	

22	<p>In a pea plant, the trait of flowers bearing purple colour (PP) is dominant over white colour (pp). Explain the inheritance pattern of F1 and F2 generations with the help of a cross following the rules of inheritance of traits. State the visible characters of F1 and F2 progenies.</p>
23	<p>Explain giving reasons the bending of the shoot tip of a plant towards light source coming from one side of the plant.</p>
24	<p>It is desired to obtain an erect image of an object, using concave mirror of focal length of 12cm.</p> <p>(i) What should be the range of the object distance in the above case?</p> <p>(ii) Will the image be smaller or larger than the object? Draw a ray diagram to show the formation of image in this case.</p> <p>(iii) Where will the image of this object be, if it is placed 24 cm in front of the mirror?</p>
25	<p>Suppose your parents have constructed a two room house and you want that in the living room there should be a provision of one electric bulb, one electric fan, a refrigerator and a plug point for appliances of power up to 2 kilowatt. Draw a circuit diagram showing electric fuse and earthing as safety devices.</p>
26	<p>(i) What is visible spectrum?</p> <p>(ii) Why is red used as the stopping light at traffic signals?</p> <p>(iii) Two triangular glass prisms are kept together connected through their rectangular side. A light beam is passed through one side of the combination. Will there be any dispersion? Justify your answer.</p>
<b>SECTION-C</b>	
27	<p>Metal X is found in nature as its sulphide XS. It is used in the galvanization of iron articles. Identify the metal X. How will you convert this sulphide ore into the metal? Explain with equation</p>
28	<p><b>State the reason for the following:</b></p>

	<p>(i) Aluminium oxide is called an amphoteric oxide.</p> <p>(ii) An iron strip dipped in a blue copper sulphate solution turns the blue solution pale green.</p> <p>(iii) Hydrogen gas is not evolved when most metals react with nitric acid.</p> <p>(iv) Calcium does not occur in free state in nature.</p> <p>(v) Sodium or potassium metals are kept immersed under kerosene.</p>								
<b>29</b>	<p>The formulae of four organic compounds are given below:</p> <table style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">B</td> <td style="text-align: center;">C</td> <td style="text-align: center;">D</td> </tr> <tr> <td style="text-align: center;"><math>C_2H_4</math></td> <td style="text-align: center;"><math>CH_3COOH</math></td> <td style="text-align: center;"><math>C_2H_5OH</math></td> <td style="text-align: center;"><math>C_2H_6</math></td> </tr> </tbody> </table> <p>(i) Which one of these compounds A, B, C or D is a saturated hydrocarbon?</p> <p>(ii) Identify the organic acid and give its structural formula.</p> <p>(iii) Which of the above compounds when heated at 443K in the presence of concentrated <math>H_2SO_4</math> forms ethane as the major product? What is the role played by concentrated <math>H_2SO_4</math> in this reaction? Also write the chemical equation involved.</p> <p>(iv) Give a chemical equation when B and C react with each other in presence of concentrated <math>H_2SO_4</math>. Name the major product formed and mention one of its important use.</p>	A	B	C	D	$C_2H_4$	$CH_3COOH$	$C_2H_5OH$	$C_2H_6$
A	B	C	D						
$C_2H_4$	$CH_3COOH$	$C_2H_5OH$	$C_2H_6$						
<b>30</b>	<p>i) Describe the various steps involved in the process of binary fission with the help of a diagram.</p> <p>ii) Why do multicellular organisms use complex way of reproduction?</p>								
<b>31</b>	<p>(i) Describe the role of prostate gland, seminal vesicle and testes in the human male reproductive system.</p> <p>(ii) How is the surgical removal of unwanted pregnancies misused?</p> <p>(iii) Explain the role of oral contraceptive pills in preventing conception.</p>								
<b>32</b>	<p>(i) Consider a conductor of resistance 'R', length 'L', thickness 'd' and</p>								

	<p>resistivity '<math>\rho</math>'.</p> <p>Now this conductor is cut into four equal parts. What will be the new resistivity of each of these parts? Why?</p> <p>(ii) Find the resistance if all of these parts are connected in:</p> <p>(a) Parallel</p> <p>(b) Series</p> <p>(iii) Out of the combinations of resistors mentioned above in the previous part, for a given voltage which combination will consume more power and why?</p>
<p><b>33</b></p>	<p>29</p> <p>(i) A lens produces a magnification of -0.5. Is this a converging or diverging lens? If the focal length of the lens is 6 cm, draw a ray diagram showing the image formation in this case.</p> <p>(ii) A girl was playing with a thin beam of light from a laser torch by directing it from different directions on a convex lens held vertically. She was surprised to see that in a particular direction, the beam of light continues to move along the same direction after passing through the lens. State the reason for her observation. Draw a ray diagram to support your answer.</p> <p style="text-align: center;"><b>OR</b></p> <p>(i) On entering in a medium from air, the speed of light becomes half of its value in air. Find the refractive index of that medium with respect to air?</p> <p>(ii) A glass slab made of a material of refractive index <math>n_1</math> is kept in a medium of refractive index <math>n_2</math>.</p> <p>A light ray is incident on the slab. Draw the path of the rays of light emerging from the glass slab, if (i) <math>n_1 &gt; n_2</math> (ii) <math>n_1 = n_2</math> (iii) <math>n_1 &lt; n_2</math></p>