



INDIAN SCHOOL AL WADI AL KABIR



DEPARTMENT OF SCIENCE

**Sample Question Paper 3 (TERM – I)**

**2021-22**

**Class X**

**Science (086)**

**Time: 90 Minutes**

**General Instructions:**

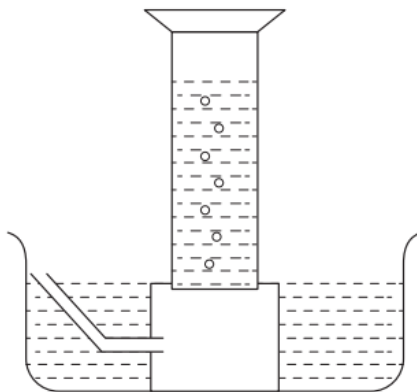
1. The Question Paper contains three sections.
2. Section A has 24 questions. Attempt any 20 questions.
3. Section B has 24 questions. Attempt any 20 questions.
4. Section C has 12 questions. Attempt any 10 questions.
5. All questions carry equal marks.
6. There is no negative marking.

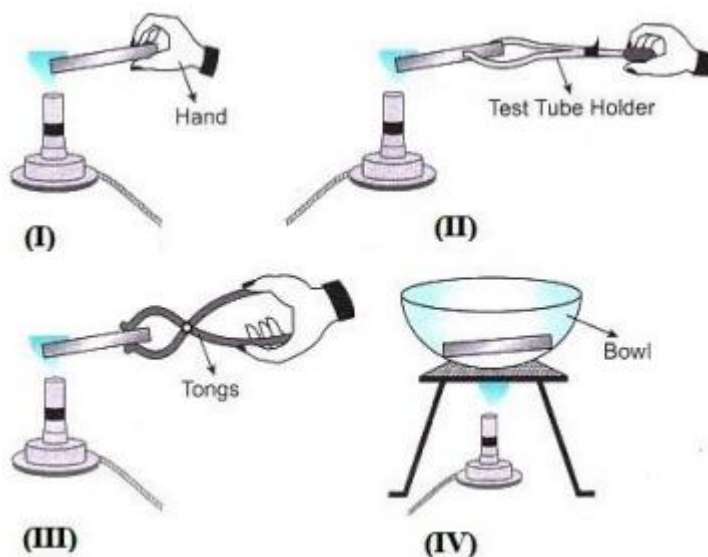
**SECTION - A**

Section – A consists of 24 questions. Attempt any 20 questions from this section.

The first attempted 20 questions would be evaluated.

1.	<p>You are given the following chemical reaction:</p> $\text{CuO} + \text{H}_2 \xrightarrow{\text{Heat}} \text{Cu} + \text{H}_2\text{O}$ <p>This reaction represents:</p> <p>(a) Combination reaction as well as double displacement reaction (b) Redox reaction as well as displacement reaction (c) Double displacement reaction as well as redox reaction (d) Decomposition reaction as well as displacement reaction</p>
2.	<p>Which of the following reactions will not take place:</p> <p>(a) <math>\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}</math> (b) <math>2\text{Ag} + \text{Cu}(\text{NO}_3)_2 \rightarrow 2\text{AgNO}_3 + \text{Cu}</math> (c) <math>\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}</math> (d) <math>\text{Mg} + 2\text{HCl} \rightarrow \text{MgCl}_2 + \text{H}_2</math></p>
3.	<p>Which of the following statements is correct for the water with detergents dissolved in it?</p> <p>(a) low concentration of hydroxide ion (<math>\text{OH}^-</math>) and high concentration of hydronium ion (<math>\text{H}_3\text{O}^+</math>) (b) high concentration of hydroxide ion (<math>\text{OH}^-</math>) and low concentration of hydronium ion (<math>\text{H}_3\text{O}^+</math>)</p>

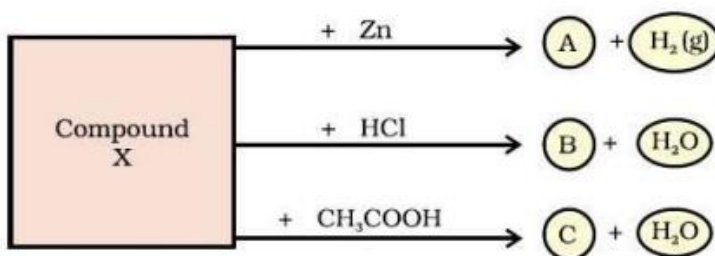
	<p>(c) high concentration of hydroxide ion (OH<sup>-</sup>) as well as hydronium ion (H<sub>3</sub>O<sup>+</sup>)</p> <p>(d) equal concentration of both hydroxide ion (OH<sup>-</sup>) and hydronium ion (H<sub>3</sub>O<sup>+</sup>).</p>
4.	<p>A reactive metal M is treated with H<sub>2</sub>SO<sub>4</sub>, the gas is evolved and is collected over the water as shown in the figure</p>  <p>The correct conclusion drawn is/are:-</p> <p>(a) The gas is hydrogen</p> <p>(b) The gas is lighter than air</p> <p>(c) The gas is SO<sub>2</sub> and is lighter than air.</p> <p>(d) Both (a) and (b)</p>
5.	<p>Materials used in the manufacture of bleaching powder are :-</p> <p>(a) lime stone and chlorine</p> <p>(b) quick lime and chlorine</p> <p>(c) slaked lime and HCl</p> <p>(d) slaked lime and chlorine</p>
6.	<p>When ferrous sulphate is heated strongly, the gas evolved is/are:-</p> <p>(a) SO<sub>2</sub></p> <p>(b) SO<sub>3</sub></p> <p>(c) Fe<sub>2</sub>O<sub>3</sub> and SO<sub>2</sub></p> <p>(d) SO<sub>2</sub> and SO<sub>3</sub></p>
7.	<p>Four students used different ways of burning magnesium ribbon during an experiment as shown below. The correct way has been followed by student:</p>



- (a) I                      (b) II                      (c) III                      (d) IV

8.

Identify the compound X on the basis of the reactions given below. Also, write the name and chemical formulae of A, B and C.



- (a) X-NaOH, A- Sodium zincate, B- Sodium chloride, C- Sodium acetate  
 (b) X-HCl, A- Sodium zincate, B- Calcium chloride, C- Sodium acetate  
 (c) X-H<sub>2</sub>SO<sub>4</sub>, A- Aluminium zincate, B- Sodium Sulphate, C- Sodium acetate  
 (d) X-NaOH, A- Sodium zincate, B- Magnesium chloride, C- Magnesium acetate

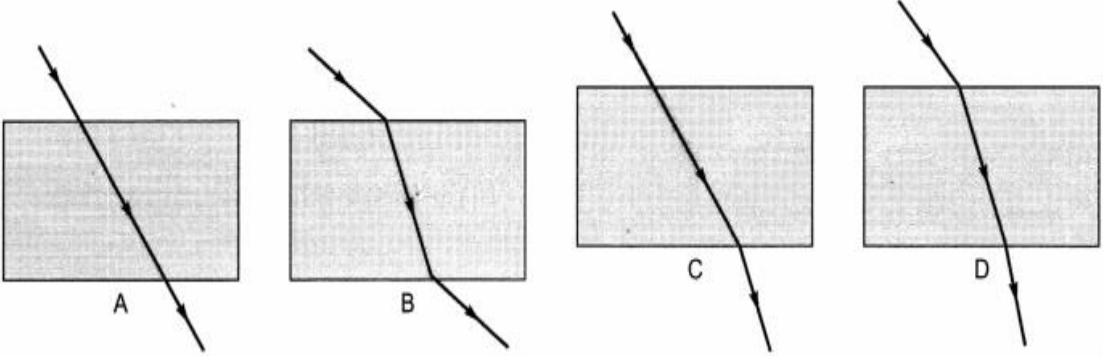
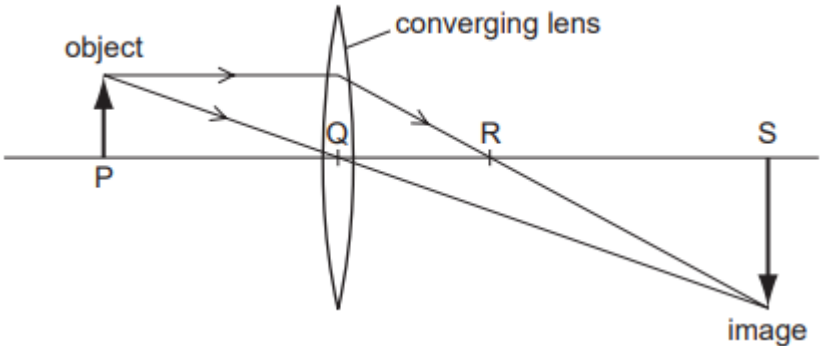
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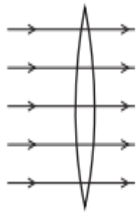
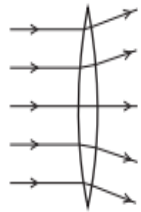
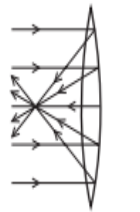

Which of the following is(are) true when HCl (g) is passed through water?

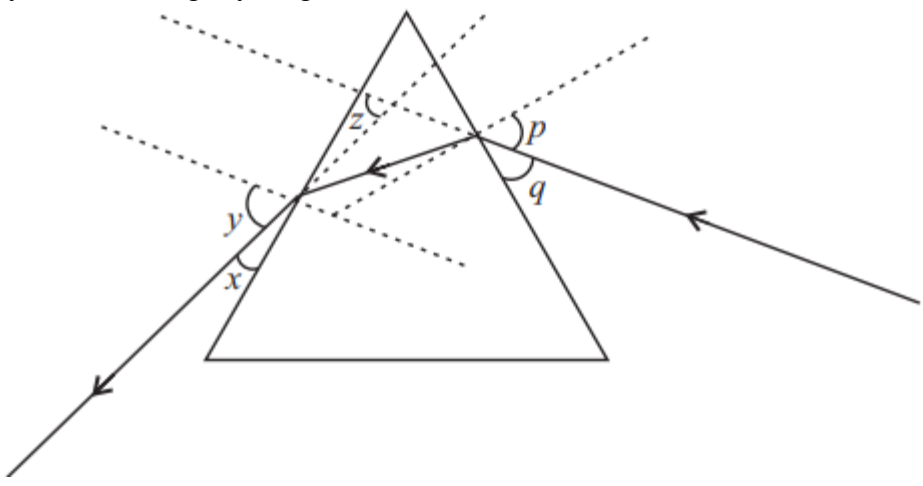
- (i) It does not ionise in the solution as it is a covalent compound.  
 (ii) It ionises in the solution  
 (iii) It gives both hydrogen and hydroxyl ion in the solution  
 (iv) It forms hydronium ion in the solution due to the combination of hydrogen ion with water molecule

- (a) (i) only                      (b) (iii) only                      (c) (ii) and (iv)                      (d) (iii) and (iv)

10.	<p>To show experimentally that zinc is more reactive than copper, the correct procedure is:</p> <p>(a) prepare copper sulphate solution and dip zinc strip in it</p> <p>(b) prepare zinc sulphate solution and dip copper strip in it</p> <p>(c) heat zinc and copper strips.</p> <p>(d) add dilute nitric acid on both the strips</p>
11.	<p>Select the appropriate equation which shows the summary of photosynthesis</p> <p><b>a)</b> <math>6\text{CO}_2 + 12\text{H}_2\text{O} \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + 6\text{H}_2\text{O}</math></p> <p><b>b)</b> <math>6\text{CO}_2 + \text{H}_2\text{O} + \text{Sunlight} \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2 + 6\text{H}_2\text{O}</math></p> <p><b>c)</b> <math>6\text{CO}_2 + 12\text{H}_2\text{O} + \text{Chlorophyll} + \text{Sunlight} \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + 6\text{H}_2\text{O}</math></p> <p><b>d)</b> <math>6\text{CO}_2 + 12\text{H}_2\text{O} + \text{Chlorophyll} + \text{Sunlight} \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{CO}_2 + 6\text{H}_2\text{O}</math></p>
12.	<p>The first enzyme to mix with food in the digestive tract is</p> <p>(a) Pepsin</p> <p>(b) Cellulase</p> <p>(c) Amylase</p> <p>(d) Trypsin</p>
13.	<p>Rings of cartilage present in the throat ensure that</p> <p>(a) Air is filtered</p> <p>(b) Air is at room temperature</p> <p>(c) Air passage does not collapse</p> <p>(d) Air is free of microbes</p>
14.	<p>Choose the forms in which most plants absorb nitrogen</p> <p>(i) Proteins      (ii) Nitrates and Nitrites      (iii) Urea      (iv) Atmospheric nitrogen</p> <p>(a) (i) and (ii)</p> <p>(b) (ii) and (iii)</p> <p>(c) (iii) and (iv)</p> <p>(d) (i) and (iv)</p>
15.	<p>Tissue fluid is also called as</p> <p>(a) Blood                      (b) Plasma                      (c) Lymph                      (d) Water</p>
16.	<p>If salivary amylase is lacking in the saliva, which of the following events in the mouth cavity will be affected?</p> <p>(a) Proteins breaking down into amino acids</p> <p>(b) Starch breaking down into sugars</p> <p>(c) Fats breaking down into fatty acids and glycerol</p> <p>(d) Absorption of vitamins</p>

17.	<p>If the magnification produced by the mirror used is <math>-0.3</math>. What is the nature and the size of the image formed?</p> <p>(a) Real and magnified  (b) Real and diminished  (c) Virtual and magnified  (d) Virtual and diminished</p>
18.	<p>The path of a ray of light coming from air passing through a rectangular glass slab traced by four students are shown as A, B, C and D in figure. Which one of them is correct?</p>  <p>(a) A  (b) B  (c) C  (d) D</p>
19.	<p>The danger signals installed at the top of tall buildings are red in colour. These can be easily seen from a distance because among all other colours, the red light</p> <p>(a) is scattered the most by smoke or fog  (b) is scattered the least by smoke or fog  (c) is absorbed the most by smoke or fog  (d) moves fastest in air</p>
20.	<p>The diagram represents a converging lens forming an image of an object. Which distance is the focal length of the lens?</p>  <p>(a) PQ      (b) PR      (c) QR      (d) QS</p>

21.	<p>A parallel beam of light falls on a converging lens. Which diagram shows what happens to the beam of light?</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p><b>A</b></p>  </div> <div style="text-align: center;"> <p><b>B</b></p>  </div> <div style="text-align: center;"> <p><b>C</b></p>  </div> <div style="text-align: center;"> <p><b>D</b></p>  </div> </div>
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22.	<p>Study the following ray diagram</p>  <p>In this diagram, the angle of incidence, the angle of emergence and the angle of deviation respectively have been represented by</p> <p>(a) y, p, z    (b) x, q, z    (c) p, y, z    (d) p, z, y</p>
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23.	<p>An object is placed 60 cm in front of a concave mirror. The real image formed by the mirror is located 30 cm in front of the mirror. What is the object's magnification?</p> <p>(a) -2                      (b) -0.5                      (c) -3                      (d) +0.5</p>
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24.	<p>If an object is placed 21 cm from a converging lens, the image formed is slightly smaller than the object. If the object is placed at a distance of 19 cm from the lens, the image formed is slightly larger than the object. The approximate focal length of the lens is:</p> <p>(a) 20 cm                      (b) 18 cm (c) 10 cm                      (d) 5 cm</p>
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**SECTION - B**

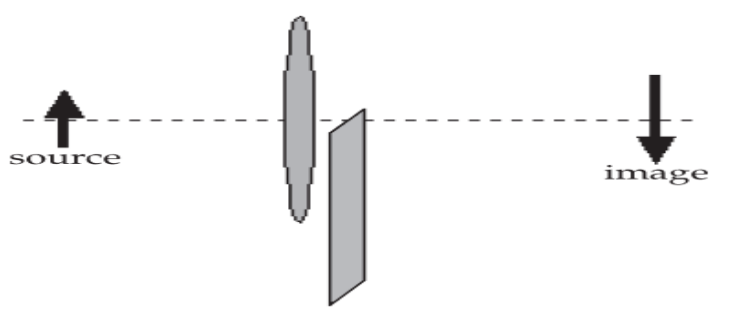
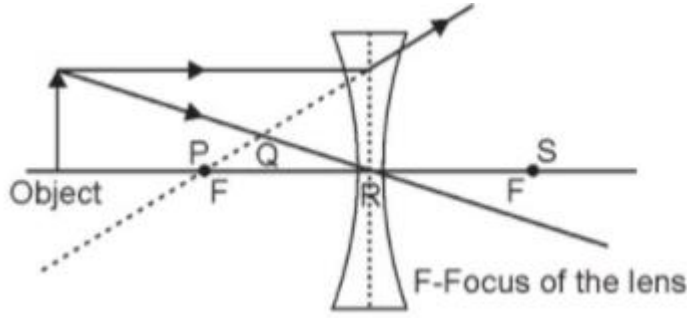
Section - B consists of 24 questions (Sl. No.25 to 48). Attempt any 20 questions from this section. The first attempted 20 questions would be evaluated.

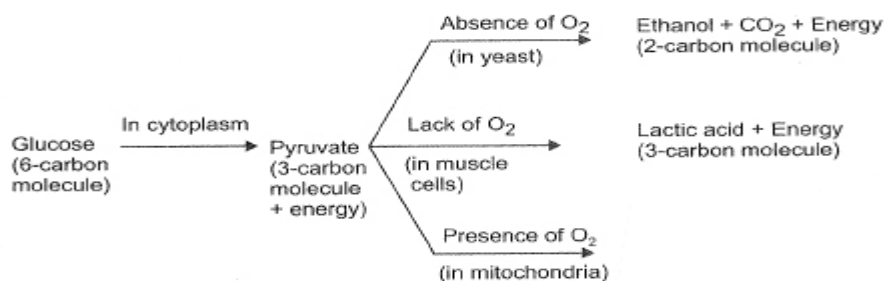
25.	<p>Which of the following statement is correct?</p> <p>(a) Copper is more reactive than zinc (b) Zinc is more reactive than copper</p>
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	(c) Copper and zinc are equally reactive (d) Zinc is less reactive than copper.
26.	The reaction of water and quick lime is an example of: (a) combination reaction (b) exothermic reaction (c) both (a) and (b) (d) None of these.
27.	The blue colour of copper sulphate solution can be changed to pale green by immersing which of the following rod in it. (a) Iron      (b) Zinc      (c) Aluminium      (d) Silver
28.	The colour of the gas evolved on heating solid lead nitrate is: (a) Yellow      (b) Brown      (c) Greenish-yellow      (d) Green
29.	When a drop of unknown sample solution X is placed on a strip of pH paper, a deep red colour is produced. This sample is: (a) NaOH (b) HCl (c) Water (d) CH <sub>3</sub> COOH
30.	When magnesium and hydrochloric acid react, they produce: (a) Oxygen and magnesium chloride (b) Chlorine and magnesium oxide (c) Hydrogen and magnesium chloride (d) Hydrogen and magnesium
<p><b>Question No. 31 to 35 consist of two</b> statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:</p> <p>A. Both A and R are true and R is the correct explanation of A  B. Both A and R are true and R is not the correct explanation of A  C. A is true but R is false  D. A is False but R is true</p>	
31.	Assertion: - HCl produces hydronium ions(H <sub>3</sub> O <sup>+</sup> ) and chloride ions(Cl <sup>-</sup> ) in aqueous solution.  Reason:- In presence of water, bases give H <sup>+</sup> ions

32.	<p><b>Assertion (A):</b> Arteries are thick-walled and elastic in nature.  <b>Reason (R) :</b> Arteries have to transport blood away from the heart.</p>
33.	<p><b>Assertion (A):</b> Molecular movements are needed for life.  <b>Reason (R):</b> Body structures made up of these molecules need continuous repair and maintenance</p>
34.	<p>Assertion (A): Mirror formula cannot be used for plane mirrors  Reason (R): Plane mirror is a spherical mirror of infinite focal length.</p>
35.	<p>The atomic numbers of four elements P, Q, R and S are 6, 11, 10 and 17 respectively. Which two elements can combine to form an ionic compound?  (a) P and R (b) Q and S (c) P and S (d) R and S</p>
36.	<p>In an experiment on photosynthesis, a portion of a leaf from de-starched potted plant was covered with opaque paper as shown below. —A shows a leaf covered with red strip, —B with green strip, —C with blue strip and —D with black strip. When the starch test was done on the leaves after 4 hours, the result showed no starch in</p> <div data-bbox="316 882 1112 1102" style="text-align: center;"> </div> <p>a) The portion covered with red, green and blue strips  b) The portion covered with green strip  c) The portion covered with black and blue strips  d) Any of the covered portions</p>
37.	<p>In the following sketch of the stomatal apparatus, the parts I, II, III and IV were labelled differently. Find the correct labelling out of the following.</p> <div data-bbox="673 1396 1063 1690" style="text-align: center;"> </div> <p>a) (I) Guard cell, (II) Stoma, (III) Starch granule, (IV) Nucleus  b) (I) Cytoplasm, (II) Nucleus, (III) Stoma, (IV) Chloroplast  c) (I) Guard cell, (II) Nucleus, (III) Stoma (IV) Chloroplast  d) (I) Cytoplasm, (II) Chloroplast, (III) Stoma, (IV) Nucleus</p>



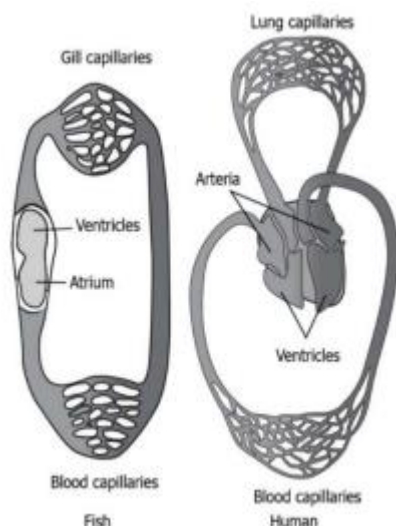
38.	<p>The correct pathway of blood in circulatory system is</p> <p>a) Atria → Ventricles → Arteries → Veins</p> <p>b) Ventricles → Atria → Veins → Arteries</p> <p>c) Ventricles → Veins → Arteries → Atria</p> <p>d) Veins → Ventricles → Atria → Arteries</p>
39.	<p>An image is formed by a converging lens. Suppose the bottom half of the lens is covered, as shown.</p>  <p>What happens to the image?</p> <p>(a) The image disappears.</p> <p>(b) The image fades.</p> <p>(c) The image formed closer to the lens.</p> <p>(d) The bottom half of the image disappears.</p>
40.	<p>The image represents the rays of light travelling through a concave lens. Where is the image most likely to form</p>  <p>(a) P      (b) Q      (c) R      (d) S</p>
41.	<p>Complete the pathway of breakdown of glucose</p>



- a) carbon di oxide + water +Energy
- b) Ethyl Alcohol + water + Energy
- c) Lactic acid + Water + Energy
- d) Ethanol + Oxygen + Energy

42.

The image shows the circulation of blood in fishes and human

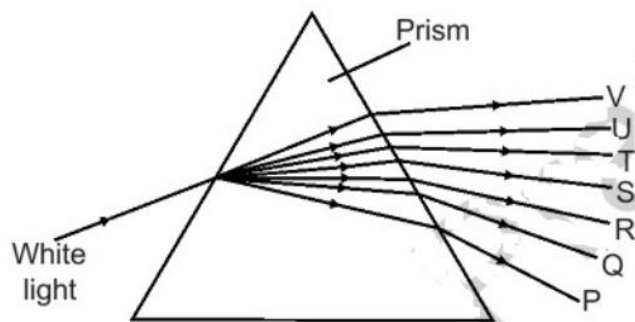


How is the circulation of blood in fish different from that in humans?

- (a) The heart in fish is bigger in size.
- (b) The flow of blood in fish is unidirectional.
- (c) The blood goes through heart only once in fishes.
- (d) The heart of fish has more chambers compared to that of a human.

43.

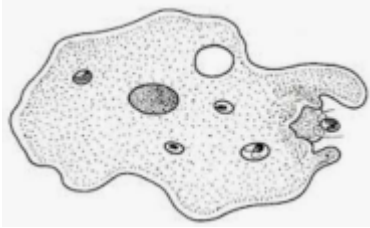
The image shows the dispersion of the white light in the prism



What will be the colours of the P,Q and R?

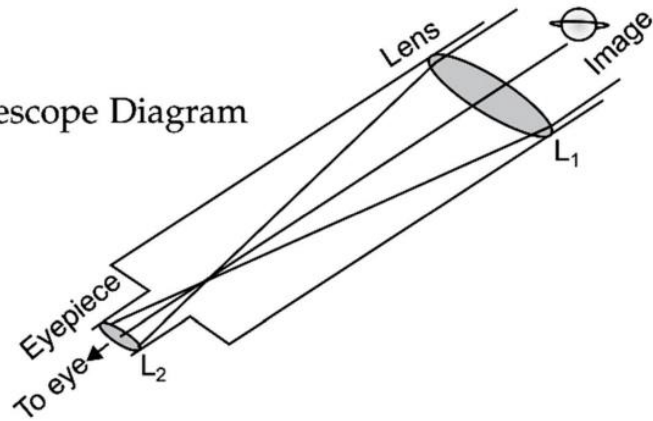
- (a) P: green ; Q:violet ; R:red
- (b) P: violet ; Q:indigo ; R:blue
- (c) P: red ; Q:violet ; R:green

	(d) P: red ; Q:green ; R:violet
44.	In which of the following cases the distance between object and its image formed will be zero? (a)When object is placed at centre of curvature of a convex mirror (b) When object is placed at centre of curvature of a concave mirror (c) When object is placed at focus of a concave mirror (d) When object is placed in between centre of curvature and focal point of a concave mirror.
45.	When stars are viewed near the horizon, they appear (a) slightly above than its actual position (b) slightly below than its actual position (c) at the same actual position (d) fluctuating above and below
46.	Velocity of light in air is $3 \times 10^8 \text{m/s}$ , while its velocity in a medium is $1.5 \times 10^8 \text{m/s}$ . Then, refractive index of the medium is (a) 3      (b) 5      (c)0.5      (d) 2
47.	Consider the following properties of virtual images: A. Cannot be projected on the screen B. Are formed by concave and convex lens C. Are always erect D. Are always inverted The correct properties are (a) A and D      (b)A and B      (c) A,B and C      (d) A,B and D
48.	Which one of the following property is generally not exhibited by ionic compounds? (a) Solubility in water (b) Electrical conductivity in solid state. (c) High melting and boiling points. (d) Electrical conductivity in molten state.
<b>SECTION – C</b>	
Section- C consists of three Cases followed by questions. There are a total of 12 questions in this section. Attempt any 10 questions from this section.	
<u>The first attempted 10 questions would be evaluated.</u>	

<b>CASE</b>	<p>Ionic compound is a chemical compound in which ions are held together by ionic bonds. An ionic bond is the type of chemical bond in which two oppositely charged ions are held through electrostatic forces. We know that, metal atoms have loosely bound valence electrons in their valence shell and non-metal atoms need electrons in their valence shell to attain noble gas configuration. The metal atom loses the valence electrons while non-metal atom accepts these electrons. By losing electrons, metal atoms change to cations and by accepting electrons, non-metals form anions. Ionic compounds are generally solid and exist in the form of crystal. They have high melting and boiling points.</p>
49.	<p>Which of the following can change to a cation?          (a) Fluorine                      (b) Oxygen                      (c) Potassium                      (d) Neon</p>
50.	<p>Ionic compounds are soluble in _____.          (a) Kerosene                      (b) Petrol                      (c) Water                      (d) None of these</p>
51.	<p>Which of the following statements is correct about ionic compounds?          I. They conduct electricity in solid state.          II. They conduct electricity in solutions.          III. They conduct electricity in molten state.          (a) I only                      (b) II only                      (c) III only                      (d) II and III only</p>
52.	<p>Select the incorrect statement.          (a) Ionic compounds are generally brittle          (b) Ions are the fundamental units of ionic compounds          (c) Formation of ionic bonds involve sharing of electrons          (d) NaCl is an ionic compound</p>
<b>CASE</b>	<p>Amoeba is an animal having no fixed shape. It ingests food particles by formation of temporary finger-like projections. The food vacuole inside amoeba breaks down the food into small and soluble molecules.</p>  <p>The digested food is thrown out by the amoeba by the rupture of cell membrane and it goes on for the search of next food particle.</p>

53.	Amoeba belongs to which group of microorganisms? (a) Fungi (b) Bacteria (c) Protozoa (d) Virus
54.	What are the temporary projections made in amoeba called? (a) Walking legs (b) Limbs (c) Pseudopodia (d) None of the above
55.	What type of nutrition is followed by amoeba? (a) Parasitic (b) Holozoic (c) Saprotrophic (d) Autotrophic
56.	The process of throwing out of undigested food in Amoeba is called (a) Egestion (b) Digestion (c) Nutrition (d) None of the above
<b>CASE</b>	Sumati wanted to see the stars of the night sky. She knows that she needs a telescope to see those distant stars. She finds out that the telescopes, which are made of lenses, are called refracting telescopes and the ones which are made of mirrors are called reflecting telescopes. So she decided to make a refracting telescope. She bought two lenses, L1 and L2, out of which L1 was bigger and L2 was smaller. The larger lens gathers and bends the light, while the smaller lens magnifies the image. Big, thick lenses are more powerful. So to see far away, she needed a big powerful lens. Unfortunately, she realized that a big lens is very heavy. Heavy lenses are hard to make and difficult to hold in the right place. Also since the light is passing through the lens, the surface of the lens has to be extremely smooth. Any flaws in the lens will change the image. It would be like looking through a dirty window.

Telescope Diagram



57.

Based on the diagram shown, what kind of lenses would Sumati need to make the telescope?

- (a) Concave lenses (b) Convex lenses (c) Bifocal lenses (d) Flat lenses

58.

If the powers of the lenses L1 and L2 are in the ratio of 4:1, what would be the ratio of the focal length of L1 and L2?

- (a) 4:1 (b) 1:4 (c) 2:1 (d) 1:1

59.

What is the formula for magnification obtained with a lens?

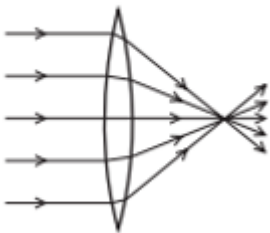
- (a) Ratio of height of image to height of object  
(b) Double the focal length.  
(c) Inverse of the radius of curvature.  
(d) Inverse of the object distance.

60.

Sumati did some preliminary experiment with the lenses and found out that the magnification of the eyepiece (L2) is 3. If in her experiment with L2 she found an image at 24 cm from the lens, at what distance did she put the object?

- (a) 72 cm (b) 12 cm (c) 8 cm (d) 6 cm

Q.NO	ANSWERS
	Section - A
1.	(b) Redox reaction as well as displacement reaction
2.	(b) $2\text{Ag} + \text{Cu}(\text{NO}_3)_2 \rightarrow 2\text{AgNO}_3 + \text{Cu}$
3.	(b) high concentration of hydroxide ion ( $\text{OH}^-$ ) and low concentration of hydronium ion ( $\text{H}_3\text{O}^+$ )
4.	(d) Both (a) and (b)
5.	(d) slaked lime and chlorine
6.	(d) $\text{SO}_2$ and $\text{SO}_3$
7.	(c) III
8.	(a) X-NaOH, A- Sodium zincate, B- Sodium chloride, C- Sodium acetate
9.	(c) (ii) and (iv)
10.	(a) prepare copper sulphate solution and dip zinc strip in it.
11.	<b>c) <math>6\text{CO}_2 + 12\text{H}_2\text{O} + \text{Chlorophyll} + \text{Sunlight} \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + 6\text{H}_2\text{O}</math></b>
12.	(a) Pepsin
13.	c) Air passage does not collapse
14.	(b) (ii) and (iii)
15.	(c) Lymph
16.	(b) Starch breaking down into sugars
17.	(b) Real and diminished
18.	(b) B

19.	(b) is scattered the least by smoke or fog
20.	(c) QR
21.	<p style="text-align: center;"><b>D</b></p> 
22.	(c) p, y, z
23.	<p>(b) -0.5</p> <p><math>u = -60 \text{ cm}, v = -30 \text{ cm}</math></p> <p><math>m = -v/u = -(-60)/-30 = -0.5</math></p>
24.	(c) 10 cm
<b>Section - B</b>	
25.	(b) Zinc is more reactive than copper
26.	(c) both (a) and (b)
27.	(a) Iron
28.	(b) Brown
29.	(b) HCl
30.	(c) Hydrogen and magnesium chloride.
31.	(c) Assertion(A) is true but Reason(R) is false.
32.	B. Both A and R are true and R is not the correct explanation of A.
33.	A. Both A and R are true and R is the correct explanation of A.
34.	(a) Both A and R are true and R is the correct explanation of A.
35.	(b) Q and S
36.	(d) Any of the covered portions



37.	c) (I) Guard cell, (II) Nucleus, (III) Stoma (IV) Chloroplast
38.	a) Atria → Ventricles → Arteries → Veins
39.	b) The image fades.
40.	(b) Q
41.	a) carbon di oxide + water +Energy
42.	(c) The blood goes through heart only once in fishes.
43.	(b)P: violet ; Q:indigo ; R:blue
44.	(b) When object is placed at centre of curvature of a concave mirror
45.	(a) slightly above than its actual position
46.	(d) 2 Given : Velocity of medium = $1.5 \times 10^8$ m/sec. Velocity of light, $c = 3 \times 10^8$ m/sec. To find : $n = ?$ $n = \frac{c}{v}$ $n = \frac{3 \times 10^8}{1.5 \times 10^8}$ $= 2$ $n = 2$
47.	(c) A,B and C
48.	(b) Electrical conductivity in solid state.
<b>Section - C</b>	

49.	(c) Potassium
50.	(c) Water
51.	(d) II and III only
52.	(c) Formation of ionic bonds involve sharing of electrons
53.	(c) Protozoa
54.	(c) Pseudopodia
55.	(b) Holozoic
56.	(a) Egestion
57.	(b) Convex lenses
58.	<p>(b) 1:4</p> $P_1 = \frac{1}{f_1} \text{ and } P_2 = \frac{1}{f_2}$ <p>Given <math>\frac{P_1}{P_2} = \frac{4}{1}</math></p> $\text{So, } \frac{\frac{1}{f_1}}{\frac{1}{f_2}} = \frac{4}{1}$
59.	(a) Ratio of height of image to height of object
60.	<p>(c) 8 cm</p> <p>Given <math>m = 3, v = 24, u = ?</math></p> <p>We know, <math>m = \frac{v}{u}</math></p> $\Rightarrow 3 = \frac{24}{u}$ <p>Hence, <math>u = 8 \text{ cm}</math></p>