



INDIAN SCHOOL AL WADI AL KABIR



DEPARTMENT OF SCIENCE

Sample Question Paper 4(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.

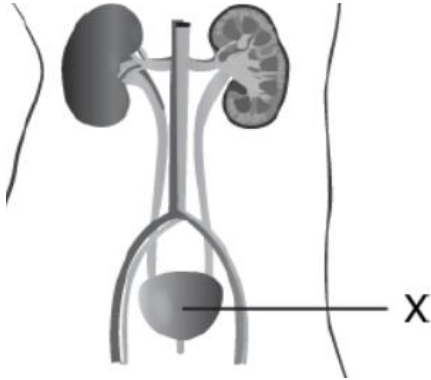
The first attempted 20 questions would be evaluated.

1.	In the balanced equation - $a\text{Fe}_2\text{O}_3 + b\text{H}_2 \rightarrow c\text{Fe} + d\text{H}_2\text{O}$ The value of a,b,c,d are respectively - (A) 1,1,2,3 (B) 1,1,1,1 (C) 1,3,2,3 (D) 1,2,2,3
2.	$\text{AgNO}_3 (\text{aq}) + \text{NaCl} (\text{aq}) \rightarrow \text{AgCl} (\text{s}) + \text{NaNO}_3 (\text{aq})$ Above reaction is a - (A) precipitation reaction (B) double displacement reaction (C) combination reaction (D) (A) and (B) both
3.	A student has mixed the solutions of lead (II) nitrate and potassium iodide. What was the colour of the precipitate formed? Can you name the compound? A. Yellow , Lead iodide

	<p>(b) Good electrical conductivity (c) Ductility (d) High melting point A. (a) & (b) B. (a) & (c) C. (b) & (c) D. (a) & (d)</p>
8.	<p>Generally metals react with acids to give salt and hydrogen gas. Which of the given acids does not give hydrogen gas on reacting with metals (except Mn and Mg)? A. H_2SO_4 B. HCl C. HNO_3 D. All the these</p>
9.	<p>The electronic configurations of three elements X, Y and Z are X – 2, 8; Y – 2, 8, 7 and Z – 2, 8, 2. Which of the given is correct? A. X is a metal B. Y is a metal C. Z is a non-metal D. Y is a non-metal & Z is a metal</p>
10.	<p>Which one of the given properties is not generally exhibited by ionic compounds? A. Solubility in water B. Low boiling point C. High melting point D. Electrical conductivity in molten state</p>
11.	<p>Arteries and veins are connected by a network of extremely narrow tubes called: a) Sieve tubes b) Capillaries c) Vena cava d) Valves</p>
12.	<p>A few drops of iodine solution were added to rice water. The solution turned blue-black in colour. This indicates that rice water contains (a) complex proteins (b) simple proteins (c) fats</p>

(d) starch

13. The image shows the excretory system in humans.



What is the importance of the labelled part in the excretory system?

- (a) It produces urine.
- (b) It filters waste from the blood.
- (c) It stores the urine till urination.
- (d) It carries urine from the kidney to the outside.

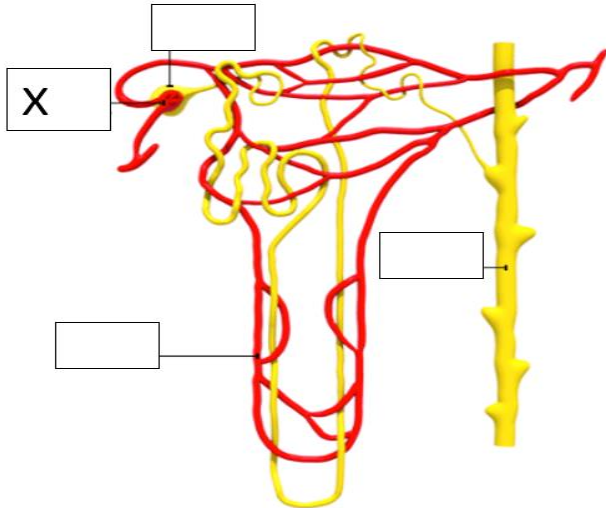
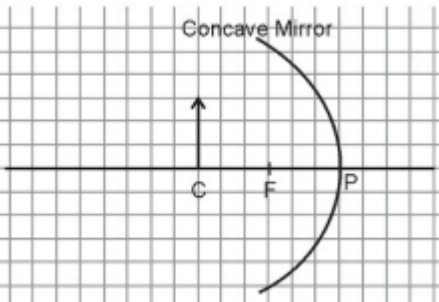
14. How do these fungi obtain nutrition?



- (a) by eating the bread on which it is growing
- (b) by using nutrients from the bread to prepare their own food
- (c) by breaking down the nutrients of bread and then absorbing them
- (d) by allowing other organisms to grow on the bread and then consuming them

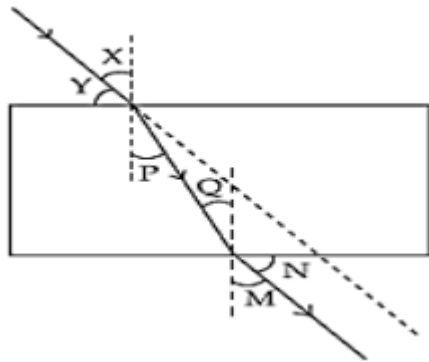
15. Which of the following equations is the summary of photosynthesis?

- (a) $6\text{CO}_2 + 12\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + 6\text{H}_2\text{O}$
- (b) $6\text{CO}_2 + \text{H}_2\text{O} + \text{Sunlight} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2 + 6\text{H}_2\text{O}$
- (c) $6\text{CO}_2 + 12\text{H}_2\text{O} + \text{Chlorophyll} + \text{Sunlight} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + 6\text{H}_2\text{O}$
- (d) $6\text{CO}_2 + 12\text{H}_2\text{O} + \text{Chlorophyll} + \text{Sunlight} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{CO}_2 + 6\text{H}_2\text{O}$

<p>16.</p>	<p>Identify the given diagram and mention the function of the part labelled as 'X'</p>  <p>(a) Neuron, filtration (b) Neuron, selective absorption (c) Nephron, filtration (d) Nephron, selective absorption</p>
<p>17.</p>	<p>Which of the following can make a parallel beam of light when light from a point source is incident on it?</p> <p>(a) Concave mirror as well as convex lens (b) Convex mirror as well as concave lens (c) Two plane mirrors placed perpendicular to each other</p> <p>Concave mirror as well as concave lens</p>
<p>18.</p>	<p>If a beam of red light and a beam of violet light are incident at the same angle on the inclined surface of a prism from air and produces angle of refraction r and v respectively which of the following is correct</p> <p>(a) $r = v$ (b) $r < v$ (c) $r > v$ (d) $r = 1/v$</p>
<p>19.</p>	 <p>Examine the above figure and state which of the following option is correct (One small box in the figure = 1 cm)</p> <p>(a) The mirror has focal length -6 cm and produces an image of magnification +1</p>

- (b) The mirror has focal length -3cm and produces an image of magnification -1
- (c) The mirror has focal length -3 cm and produces an image of magnification +1
- (d) The mirror has focal length -6 cm and produces an image of magnification -1

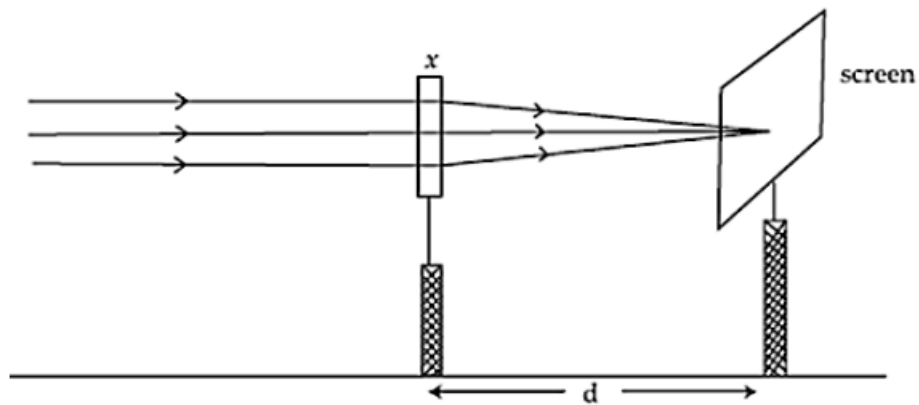
20. For the refraction through a rectangular glass slab the diagram is given below.



The angle of incidence, angle of emergence and angle of refraction are respectively.

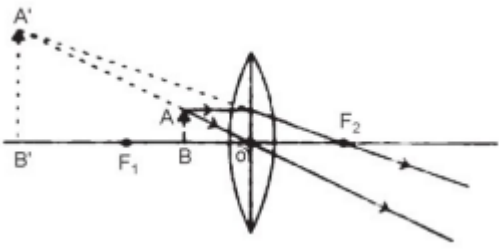
- (a) X,P,M (b) X,M,P (c) Y,M,P (d) Y,N,P

21. A student determined the focal length of a device X 'by focusing a distant object on the screen as shown in the following diagram.



Select the correct option.

- (a) Device X 'is a concave mirror and distance d 'is its focal length
- (b) Device X 'is a concave mirror and distance d 'is its radius of curvature
- (c) Device X 'is a convex lens and distance d 'is its radius of curvature
- (d) Device X 'is a convex lens and distance d 'is its focal length

22.	<p>The power of the lens is +2.5D. Its focal length in cm will be</p> <p>(a) + 40 (b) - 40 (c) + 80 (d) - 8</p>
23.	<p>How many times does a ray of light bend on passing through a prism?</p> <p>(a) Once (b) Twice (c) Thrice (d) None of these</p>
24.	<p>A concave mirror gives real, inverted and same size image if the object is placed at _____</p> <p>(a) At F (b) At infinity (c) At C (d) Beyond C</p>
<p>SECTION - B</p> <p>Section - B consists of 24 questions (Sl. No.25 to 48). Attempt any 20 questions from this section. <u>The first attempted 20 questions would be evaluated.</u></p>	
25.	<p>The magnification produced by a rear-view mirror that is used in the vehicles is</p> <p>(a) less than 1 (b) more than 1 (c) equal to 1 (d) less than 1 or more than 1</p>
26.	<p>A convex lens has a focal length of 10 cm. At what distance from the lens should the object be placed so that it forms a real and inverted image 20 cm away from the lens?</p> <p>(a) -20 cm (b) -40 cm (c) -60 cm (d) + 8 cm</p>
27.	<div style="text-align: center;">  </div> <p>The above lens has a focal length 10 cm. The object of height 2 mm is placed at a</p>

	<p>distance of 5 cm from the optical centre. Find the height of the image</p> <p>(a) 4 cm (b) 6.67 mm (c) 4 mm (d) 3.33mm</p>
28.	<p>The refractive index of flint glass is 1.65 and that of alcohol is 1.36 with respect to air. What is the refractive index of flint glass with respect to alcohol</p> <p>(a) 0.82 (b) 1.21 (c) 1.11 (d) 1.01</p>
29.	<div style="text-align: center;"> </div> <p>While looking at the above diagram Nalini concluded the following</p> <p>(i) The image of the above object will be a virtual one</p> <p>(ii) The image of the object will be inverted</p> <p>(iii) This is the concave mirror and the focal length will be negative</p> <p>(iv) Magnification $m = -1$ for the image</p> <p>Which of the above statements are correct?</p> <p>(a) (i) and (ii) are correct</p> <p>(b) (i) and (iii) are correct</p> <p>(c) (ii) and (iii) are correct</p> <p>(d) All are correct</p>
30.	<p>Rays from sun converge at a point 15 cm in front of a concave mirror Where should an object be placed so that its image is equal to the size of the object?</p> <p>(a) 30 cm in front of the mirror</p> <p>(b) 15 cm in front of the mirror</p> <p>(c) Between 25 and 30 cm in front of the mirror</p> <p>(d) More than 30 cm in front of the mirror</p>
<p>Question No. 31 to 35 consist of two 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</p> <p>B. Both A and R are true and R is not the correct explanation of A</p>	

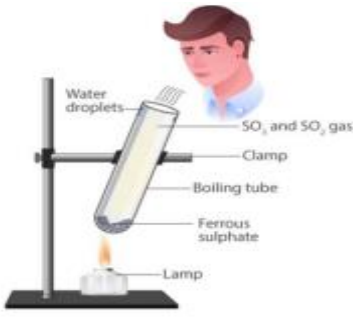
	<p>C. A is true but R is false</p> <p>D. A is False but R is true</p>
31.	<p>Assertion(A): Sky appears blue in day time</p> <p>Reason (R): White light is composed of seven colours</p>
32.	<p>Assertion (A): Silver Chloride turns grey in sunlight.</p> <p>Reason(R): This is an example of thermal decomposition</p>
33.	<p>Assertion: Although bile juice has no digestive enzymes it is still considered to be very important during digestion of food</p> <p>Reason: Bile provide alkaline medium and emulsifies fat.</p>
34.	<p>Assertion: Herbivores have longer small intestine as compared to Carnivores</p> <p>Reason: Food takes more time to digest in Carnivore</p>
35.	<p>Heterotrophic nutrition involves</p> <p>(a) Production of simple sugar from inorganic compounds</p> <p>(b) Utilisation of chemical energy to prepare food</p> <p>(c) Utilisation of energy obtained by plants</p> <p>(d) All of these</p>
36.	<p>Amount of energy released is more during</p> <p>(a) Anaerobic respiration</p> <p>(b) Fermentation</p> <p>(c) Aerobic respiration</p> <p>(d) Reduction</p>
37.	<p>Which of the following events in the mouth cavity will be affected if salivary amylase is lacking in the saliva?</p> <p>(a) Starch breaking down into sugars.</p> <p>(b) Proteins breaking down into amino acids.</p> <p>(c) Absorption of vitamins.</p> <p>(d) Fats breaking down into fatty acids and glycerol.</p>
38.	<p>Name the substances whose build up in the muscles during vigorous physical exercise may cause cramps?</p> <p>(a) Ethanol + Carbon dioxide + Energy</p> <p>(b) Lactic acid + Energy</p> <p>(c) Carbon dioxide + Water + Energy</p> <p>(d) Pyruvate</p>

39.	<p>Which is the correct sequence of body parts in the human alimentary canal?</p> <p>(a) Mouth → stomach → small intestine → large intestine → oesophagus (b) Mouth → oesophagus → stomach → small intestine → large intestine (c) Mouth → stomach → oesophagus → small intestine → large intestine (d) Mouth → oesophagus → stomach → large intestine → small intestine</p>														
40.	<p>If the power of the lens is -4 D then it means that the lens is</p> <p>(a) Concave lens of focal length -50 m (b) Convex lens of focal length +50 cm (c) Concave lens of focal length -25 cm (d) Convex lens of focal length -25 m</p>														
41.	<p>What is the chemical formula of POP (Plaster of Paris)?</p> <p>(A) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ (B) $\text{CaSO}_4 \cdot 3\text{H}_2\text{O}$ (C) $\text{CaSO}_4 \cdot 1/2\text{H}_2\text{O}$ (D) $2\text{CaCO}_3 \cdot 1/2\text{H}_2$</p>														
42.	<p>Generally, non-metals are not lustrous .Which of the following non-metal is lustrous?</p> <p>A. Sulphur B. Oxygen C. Nitrogen D. Iodine</p>														
43.	<p>Which salt is Acidic in nature?</p> <p>(A) NH_4Cl (B) $\text{CH}_3\text{COONH}_4$ (C) NaCl (D) Na_2CO_3</p>														
44.	<p>The image shows the pH values of four solutions on a pH scale.</p> <table border="1" data-bbox="305 1650 1442 1705"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td> </tr> </table> <p style="text-align: center;"> ↑ ↑ ↑ ↑ A B C D </p> <p>Which solutions are alkaline in nature?</p> <p>(A) A and B</p>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	2	3	4	5	6	7	8	9	10	11	12	13	14		

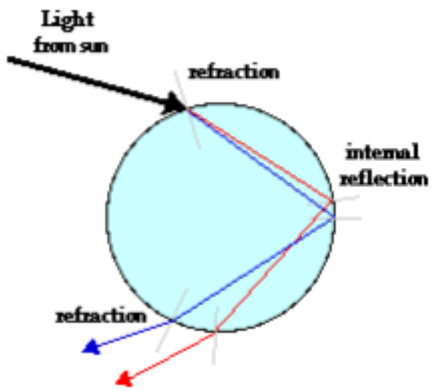
	<p>(B) B and C</p> <p>(C) C and D</p> <p>(D) A and D</p>
45.	<p>An aqueous solution turns red litmus solution blue. Excess addition of which of the following solution would reverse the change?</p> <p>(A) Baking powder</p> <p>(B) Lime</p> <p>(C) Ammonium hydroxide solution</p> <p>(D) Hydrochloric acid</p>
46.	<p>$\text{Pb} + \text{CuCl}_2 \rightarrow \text{PbCl}_2 + \text{Cu}$</p> <p>The above reaction is an example of:</p> <p>(A) combination</p> <p>(B) double displacement</p> <p>(C) decomposition</p> <p>(D) displacement</p>
47.	<p>Example of an amphoteric oxide is:</p> <p>(A) Na_2O</p> <p>(B) K_2O</p> <p>(C) Al_2O_3</p> <p>(D) MgO</p>
48.	<p>The chemical reaction between potassium chloride and silver nitrate is given by the chemical equation.</p> $\text{AgNO}_3 + \text{KCl} \rightarrow \text{AgCl} + \text{KNO}_3$ <p>What can be inferred from the chemical equation?</p> <p>(a) silver nitrate and potassium undergo a decomposition reaction to form silver chloride and potassium nitrate</p> <p>(b) silver nitrate and potassium undergo a displacement reaction to form silver chloride and potassium nitrate</p> <p>(c) silver nitrate and potassium undergo a combination reaction to form silver chloride and potassium nitrate</p> <p>(d) Silver nitrate and potassium chloride undergo double displacement reaction to form silver chloride and potassium nitrate</p>
<p>SECTION –</p> <p>C</p>	

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.

The first attempted 10 questions would be evaluated.

CASE	<p>Take about 2 g ferrous sulphate crystals in a dry boiling tube. Heat the boiling tube over the flame of a burner or spirit lamp. In this reaction you can observe that a single reactant breaks down to give simpler products. This is a decomposition reaction. Ferrous sulphate crystals ($\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$) lose water when heated and the colour of the crystals changes. It then decomposes to ferric oxide (Fe_2O_3), sulphur dioxide (SO_2) and sulphur trioxide (SO_3). Ferric oxide is a solid, while SO_2 and SO_3 are gases.</p> 
49.	<p>What can we observe in this activity?</p> <ul style="list-style-type: none">A. Water vapor is evolvedB. Change in colourC. Smell of burning sulphurD. All of the above
50.	<p>What is the colour of iron oxide?</p> <ul style="list-style-type: none">A. BrownB. GreyC. YellowD. White
51.	<p>What type of chemical reaction occurs in this type of change?</p> <ul style="list-style-type: none">A. Thermal decomposition reactionB. Photochemical decompositionC. Combination reactionD. Displacement reaction

52.	<p>The balanced chemical equation for the thermal decomposition of ferrous sulphate crystals is :</p> <p>A. $6\text{FeSO}_4(\text{s}) \rightarrow 3\text{Fe}_2\text{O}_3(\text{s})+\text{SO}_2(\text{g})+4\text{SO}_3(\text{g})$</p> <p>B. $3\text{FeSO}_4(\text{s}) \rightarrow \text{Fe}_3\text{O}_4(\text{s})+\text{SO}_2(\text{g})+\text{SO}_3(\text{g})$</p> <p>C. $2\text{FeSO}_4(\text{s}) \rightarrow \text{Fe}_2\text{O}_3(\text{s})+\text{SO}_2(\text{g})+\text{SO}_3(\text{g})$</p> <p>D. $\text{FeSO}_4(\text{s}) \rightarrow \text{Fe}_2\text{O}_3(\text{s})+\text{SO}_2(\text{g})+\text{SO}_3(\text{g})$</p>
CASE	<p>On human beings, the food is taken in through the mouth and is broken down by various steps along the alimentary canal and the digested food is absorbed in the small intestine to be sent in the body. The nutrition taken by the body is broken in the form of ATP which provides energy for other reactions in the cell.</p>
53.	<p>What is the full form of ATP?</p> <p>(a) Adenine tri-phosphate</p> <p>(b) Adenosine tri-phosphate</p> <p>(c) Adenosine tetraphosphate</p> <p>(d) Adenosine monophosphate</p>
54.	<p>Function of large intestine is mainly</p> <p>(a) Absorption of water</p> <p>(b) Assimilation of food</p> <p>(c) Digestion of fats</p> <p>(d) Digestion of carbohydrate</p>
55.	<p>The stomach produces acidic hydrochloric acid. Why?</p> <p>(a) Starch is broken down into simple glucose by it.</p> <p>(b) To neutralize bases present in food.</p> <p>(c) Pepsin needs an acidic medium to work upon proteins.</p> <p>(d) None of the above</p>
56.	<p>Bile juice is secreted by</p> <p>(a) Stomach</p> <p>(b) Saliva</p> <p>(c) Liver</p> <p>(d) None of the above</p>

<p>CASE</p>	<p>A collection of suspended water droplets in the atmosphere serves as a refractor of light.</p> <p>The water represents a medium with a different optical density than the surrounding air. Light waves refract when they cross over the boundary from one medium to another. The decrease in speed upon entry of light into a water droplet causes a bending of the path of light towards the normal. And upon exiting the droplet, light speeds up and bends away from the normal.</p> <p>The droplet causes a deviation in the path of light as it enters and exits the drop.</p> <p>There are countless paths by which light rays from the sun can pass through a drop. Each path is characterized by this bending towards and away from the normal.</p> <p>One path of great significance in the discussion of rainbows is the path in which light refracts into the droplet, internally reflects, and then refracts out of the droplet. The diagram given along with depicts such a path. A light ray from the sun enters the droplet with a slight downward trajectory. Upon refracting twice and reflecting once, the light ray is dispersed and bent downward towards an observer on earth's surface. Other entry locations into the droplet may result in similar paths or even in light continuing through the droplet and out the opposite side without significant internal reflection. But for the entry location shown in the diagram given along with, there is an optimal concentration of light exiting the airborne droplet at an angle towards the ground. As in the case of the refraction of light through prisms with nonparallel sides, the refraction of light at two boundaries of the droplet results in the dispersion of light into a spectrum of colors. The shorter wavelength blue and violet light refract a slightly greater amount than the longer wavelength red light. Since the boundaries are not parallel to each other, the double refraction results in a distinct separation of the sunlight into its component colors.</p>  <p>The diagram shows a circular water droplet. An arrow labeled 'Light from sun' points towards the top-left surface of the droplet. At this point, the light ray is labeled 'refraction' and bends towards the center. Inside the droplet, the ray hits the back surface and is labeled 'internal reflection'. At the bottom-left surface, the ray is labeled 'refraction' again and exits the droplet. Two rays are shown exiting: a blue ray and a red ray, with the blue ray bent more sharply towards the observer than the red ray.</p>
<p>57.</p>	<p>The speed of light from sun when enters the water droplet undergoes this phenomenon</p> <ol style="list-style-type: none"> its speed decreases Light gets absorbed in the droplet it becomes monochromatic Passes through undeviated

58.	<p>The rainbow formation could be because of the following reasons</p> <ul style="list-style-type: none"> a. light being reflected when entering a droplet of water, then refracted inside on the back of the droplet and refracted again when leaving it. b. light being refracted when entering a droplet of water, then reflected inside on the back of -the droplet and refracted again when leaving it. c. Due to interference of different wavelengths in white light d. All scenarios possible.
59.	<p>When compared to air, medium of water droplet is</p> <ul style="list-style-type: none"> a. Optically rarer b. Has same optical density c. Optically insignificant when compared to air d. Optically denser.
60.	<p>Rainbow can also be observed on a sunny day when an observer looks at the sky through a waterfall or a sprinkler source or through a water fountain with the following condition.</p> <ul style="list-style-type: none"> a. Sun between the observer and the water source. b. Sun behind the observer. c. Sun behind the water source with observer in the opposite direction. d. Position of sun does not affect the formation of rainbow

Q.NO	ANSWERS
	Section - A
1.	(C)
2.	(D)
3.	(A)
4.	(B)
5.	(C)
6.	(A)
7.	(D)
8.	(C)
9.	(D)
10.	(B)
11.	(B)
12.	(D)
13.	(C)
14.	(C)
15.	(C)
16.	(C)
17.	a; the object at F produces parallel rays
18.	b; angle of deviation is more for violet

19.	b; the focal length is -3 cm and as the object is kept at C the same sized real image is obtained making the magnification -1
20.	b; angle of incidence is the angle between incident ray and normal angle of refraction is the angle between refracted ray and normal and angle of emergence is the angle between emergent ray and normal
21.	d; convex lens as the light is passing through X and it is a converging lens the distance between screen which is the focus and lens is the focal length
22.	a; f in cm = $100/p = 100/+2.5 = +40$ cm
23.	b; twice
24.	c

Section - B

25.	a; rear view mirrors are convex mirrors which always gives diminished image and hence m less than 1
26.	a; object kept at $2f$
27.	c; $v = -10$ cm using lens equation ; $h_i/h_o = v/u$ $h_i = 4$ mm
28.	b; $n_{\text{flint glass}}/n_{\text{alcohol}} = 1.65/1.36 = 1.21$
29.	c
30.	a; focal length is 15 cm and the object is kept at C which is $2f$ in front of the mirror
31.	b
32.	(C) Assertion is true but reason is false
33.	(B)
34.	(C)
35.	(C)
36.	(C)
37.	(A)
38.	(B)
39.	(B)

40.	$c; f = 100/p = 100/-4 = -25$ cm focal length -ve for concave lens
41.	(C)
42.	(D) Iodine
43.	(A) HCl is a strong acid and NH_4OH is a weak base.
44.	(C) — —
45.	(D) —
46.	(D)
47.	(C) —

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48.	(d) Silver nitrate and potassium chloride undergo double displacement reaction to form silver chloride and potassium nitrate
Section - C	
49.	(D) All of the above
50.	(A)
51.	(A)
52.	(C)
53.	(B)
54.	(A)
55.	(C)
56.	(C)
57.	a _____
58.	b _____
59.	d _____
60.	b _____