

SAMPLE Paper 3

[Easy Concept]

Time Allowed : 90 Minutes]

[Max. Marks : 40]

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

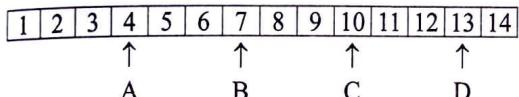
Section – A consists of 24 questions. Attempt any 20 questions from this section.

The first attempted 20 questions would be evaluated.

1. The formula of Ammonium phosphate is

(a) NH_4PO_4 (b) $(\text{NH}_4)_2\text{PO}_4$ (c) $(\text{NH}_4)_3\text{PO}_4$ (d) $(\text{NH}_4)_3(\text{PO}_4)_2$

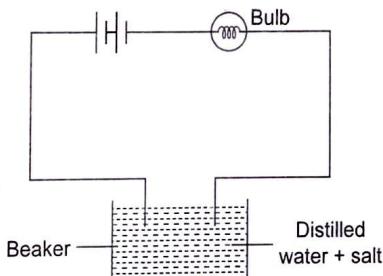
2. The image shows the pH values of the solution on a pH scale



Which solutions are alkaline in nature?

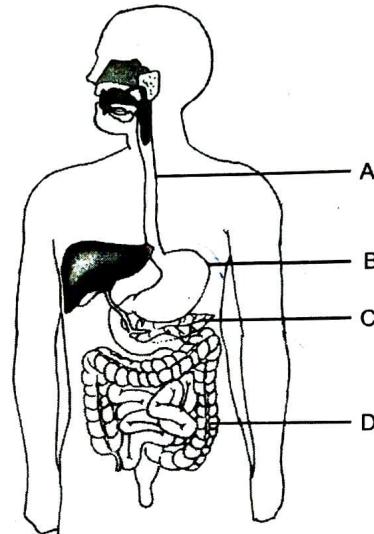
(a) A and B (b) B and C (c) C and D (d) A and D

3. A salt solution is placed in a beaker. How does the salt solution help the LED to glow?

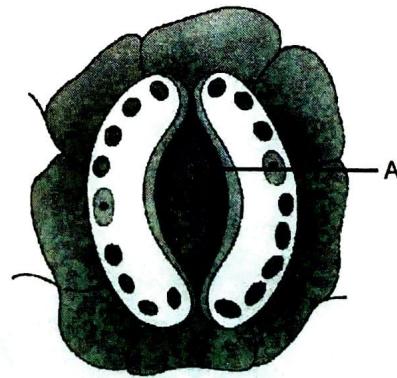


- (a) Salt solution is covalent and conducts electricity.
(b) Salt solution has low melting point which allows current.
(c) Salt solution has high boiling point which allows flow of electric current.
(d) Salt solution contains ions which make it conductive and allows electricity to flow.
4. Zinc reacts with silver nitrate to form which compounds?
(a) $\text{Zn}(\text{NO}_3)_2 + \text{Ag}$ (b) $\text{ZnNO}_3 + \text{Ag}$
(c) $\text{AgNO}_3 + \text{Zn}(\text{NO}_3)_2$ (d) $\text{Ag} + \text{Zn}(\text{NO}_3)_3$
5. Which of the following is not a combination reaction?
(a) $2\text{Mg} + \text{O}_2 \longrightarrow 2\text{MgO}$ (b) $2\text{H}_2 + \text{O}_2 \longrightarrow 2\text{H}_2\text{O}$
(c) $2\text{CO} + \text{O}_2 \longrightarrow 2\text{CO}_2$ (d) $2\text{KClO}_3 \xrightarrow{\Delta} 2\text{KCl} + 3\text{O}_2$

6. pH of H_2O is (a) 7 (b) 8 (c) 9 (d) 10
7. The removal of hydrogen from a substance is called _____.
 (a) reduction (b) oxidation (c) precipitation (d) ionisation
8. $NaHCO_3$ formed by reaction of
 (a) $NaOH + H_2CO_3$ (b) $NaCl + H_2CO_3$ (c) $Na_2CO_3 + HCl$ (d) $NaOH + Na_2CO_3$
9. Lime water reacts with chlorine to form
 (a) $CaCl_2$ (b) $CaOCl_2$ (c) $Ca(ClO_3)_2$ (d) CaO_2Cl_2
10. The symbolic representation of a chemical reaction is called
 (a) chemical reaction (b) chemical equation (c) chemical changes (d) None of these
11. From the given picture of the digestive system, identify the part labelled as gastric gland.

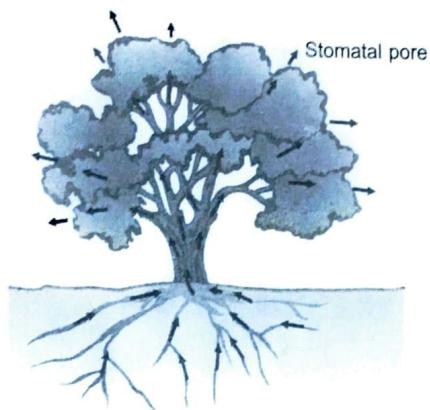


- (a) A (b) B (c) C (d) D
12. Litmus is extracted from a type of plant called _____.
 (a) litmus (b) turmeric (c) lichen (d) latex
13. The process in which loss of water takes place in the form of water vapour through stomata is called
 (a) transportation (b) transpiration (c) guttation (d) translocation
14. Part A in the given diagram is



- (a) Guard cell (b) Epidermal cell (c) Stomatal pore (d) Chloroplast

15. Identify the process shown in given diagram



- (a) Movement of water during transpiration in a tree.
(b) Movement of minerals during transpiration in a tree.
(c) Movement of carbon dioxide during transpiration in a tree.
(d) None of the above.

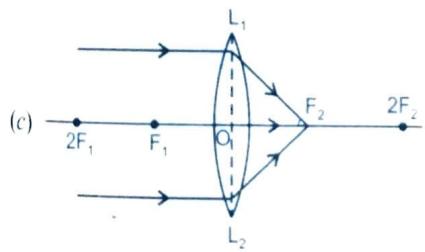
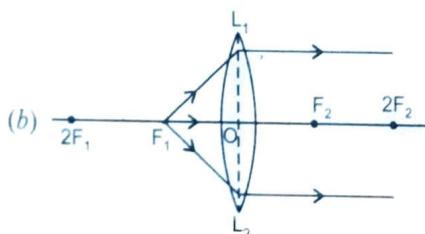
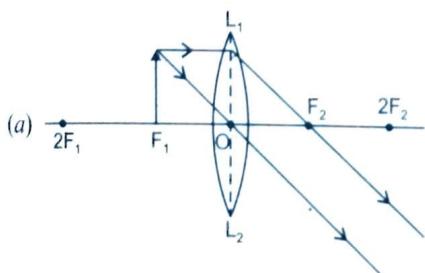
16. The largest gland which is associated with the alimentary canal of human beings is

- (a) Salivary glands (b) Liver (c) Pancreas (d) Thyroid

17. The word RED will be appeared as _____ in a plane mirror.

- (a) D E R (b) R E D (c) R E D (d) D E R

18. Identify the correct ray diagram drawn by a student.



- (d) All are correct.

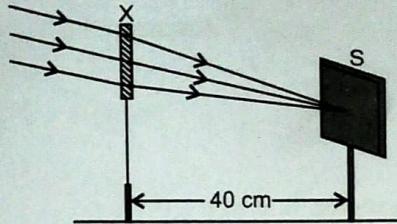
19. The image which cannot be obtained on a screen is called

- (a) real image (b) virtual image
(c) magnified image (d) diminished image

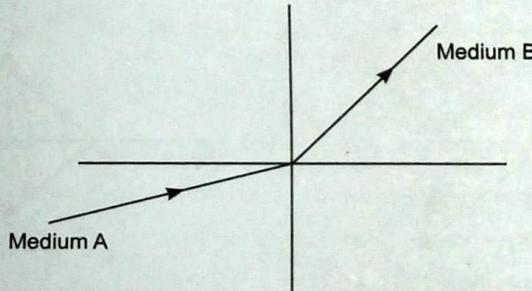
20. Image formed by plane mirror is

- (a) Real and erect (b) Real and inverted
(c) Virtual and erect (d) Virtual and inverted

21. Which of the following mirror is used by a dentist to examine a small cavity?
- Convex mirror
 - Plane mirror
 - Concave mirror
 - Combination of convex and concave mirror
22. A student focussed the image of a distant object using a device 'X' on a white screen 'S' as shown in the figure. If the distance of the screen from the device is 40 cm, select the correct statement about the device.



- The device X is a convex lens of focal length 20 cm.
 - The device X is a concave mirror of focal length 40 cm.
 - The device X is a concave mirror of radius of curvature 40 cm.
 - The device X is a convex lens of focal length 40 cm.
23. A piece of paper is placed at the focus of a convex lens focussing sunlight. The paper will
- brighten itself
 - fade off
 - burn
 - turn into pieces
24. A light ray enters from medium A to medium B as shown in figure. The refractive index of medium B relative to A will be

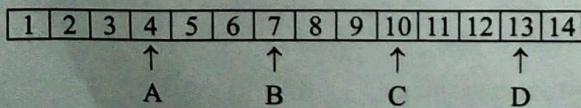


- greater than unity
- less than unity
- equal to unity
- zero

SECTION-B

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

25. The image shows the pH values of the solutions on a pH scale

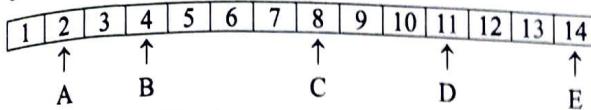


Which solutions are alkaline in nature?

- A and B
 - B and C
 - C and D
 - A and D
26. Egg shell is made up of

- CaCO_3
- CaO
- $\text{Ca}(\text{OH})_2$
- CaCl_2

27. The figure shows five solutions labelled on a pH scale.



Which of the following classification is correct?

- (a) B is strongest acid, E is strongest base
(c) A is strongest acid, E is strongest base
28. Metal oxides are mostly _____ in nature.
(a) acidic ~~(b)~~ basic (c) neutral (d) none of these

29. Which among the following is not a base?

- (a) NaOH (b) KOH (c) NH₄OH (d) C₂H₅OH

30. Which of the following metals is highly reactive?

- (a) Sodium (b) Magnesium (c) Zinc (d) Aluminium

Question No. 31 to 34 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- (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

31. **Assertion:** Pure water is neither acidic nor basic.

Reason: The pH of solution is inversely proportional to conc. of [H₃O]⁺.

32. **Assertion:** Zinc reacts with sulphuric acid to form zinc sulphate and hydrogen gas and it is displacement reaction.
Reason: Zinc reacts with oxygen to form zinc oxide.

33. **Assertion:** Energy is required to carry out different life processes.

Reason: Energy is obtained in the form of ATP in the mitochondria.

34. **Assertion:** Blue colour of sky appears due to scattering of blue colour.

Reason: Blue colour has shortest wavelength in the visible spectrum.

35. Which of the following is not a natural indicator?

- (a) Litmus (b) Turmeric (c) Methyl orange (d) red cabbage

36. During respiration exchange of gases take place in

- (a) trachea and larynx (b) alveoli of lungs
(c) alveoli and throat (d) throat and larynx

37. Large intestine in man mainly carries out

- (a) absorption (b) assimilation
(c) digestion of fats (d) digestion of carbohydrates

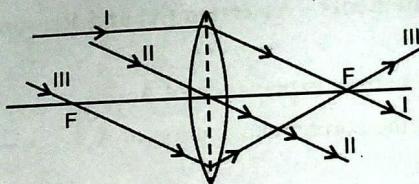
38. Normal blood pressure (systolic/diastolic) is

- (a) 120/80 mm of Hg (b) 160/80 mm of Hg
(c) 120/60 mm of Hg (d) 180/80 mm of Hg

39. For a real object, which of the following can produce a real image?

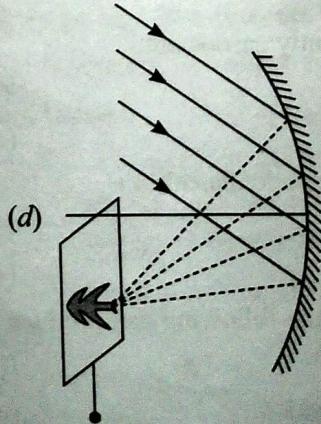
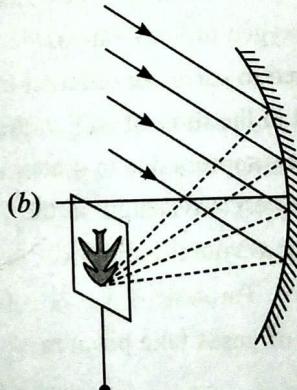
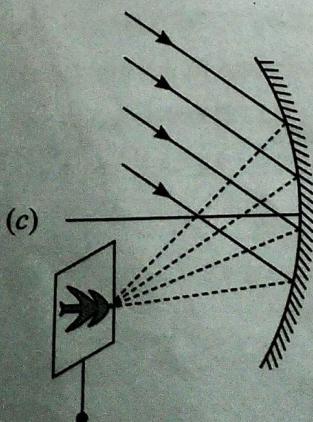
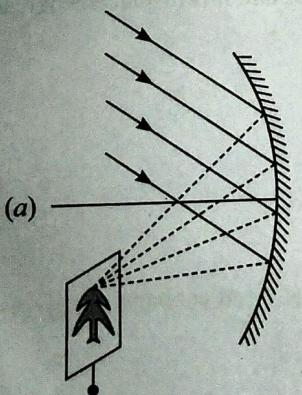
- (a) Plane mirror (b) Concave mirror
(c) Concave lens (d) Convex mirror

40. The refractive index of water is 1.33. The speed of light in water will be
 (a) 1.33×10^8 m/s (b) 3×10^8 m/s
 (c) 2.26×10^8 m/s (d) 2.66×10^8 m/s
41. The part of the digestive system where no digestion takes place is
 (a) ileum (b) stomach (c) mouth (d) oesophagus
42. Amoeba shows the following kind of nutrition—
 (a) Autotrophic (b) Holozoic (c) Saprotrophic (d) Parasitic
43. As light travels from a rarer to a denser medium it will have
 (a) increased velocity (b) decreased velocity
 (c) decreased wavelength (d) both (b) and (c)
44. For making the ray diagrams for a convex lens, a student must consider at least two refracted rays to locate the position of image. Out of the three rays shown by him, the incorrect one is

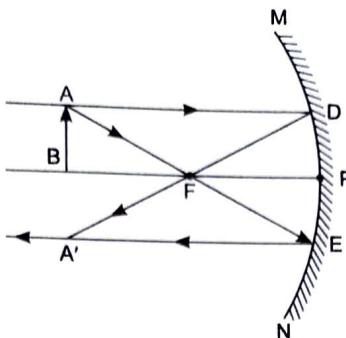


- (a) I (b) II (c) III (d) I and II both

45. Parallel rays, from the top of a distant tree, incident on a concave mirror, form an image on the screen. Which of the given diagrams correctly shows the formation of image of the tree?

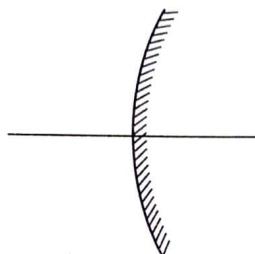


46. The object is placed on the centre of curvature as shown in figure. Choose the appropriate position of image from given options.



- (a) At centre of curvature
- (b) At focus
- (c) Between focus and centre of curvature
- (d) At infinity

47.



Identify the type of mirror.

- (a) concave
- (b) convex
- (c) Both concave and convex
- (d) None of the above

48. $\text{MgO} + \text{HNO}_3 \longrightarrow$

Which of the following equation is correct?

- (a) $\text{MgO} + \text{HNO}_3 \longrightarrow \text{Mg}_3\text{N}_2 + 4\text{H}_2\text{O}$
- (b) $\text{MgO} + \text{HNO}_3 \longrightarrow \text{Mg}(\text{OH})_2 + 2\text{HO}_2$
- (c) $\text{MgO} + \text{HNO}_3 \longrightarrow \text{Mg} + \text{NO}_2 + \text{O}_2$
- (d) $\text{MgO} + 2\text{HNO}_3 \longrightarrow \text{Mg}(\text{NO}_3)_2 + \text{H}_2\text{O}$

SECTION-C

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.

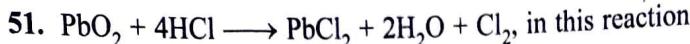
I. Redox reactions are reactions in which oxidation and reduction take place simultaneously. Oxidation involves loss of electrons, addition of O_2 , removal of H_2 . Reduction involves gain of electrons, removal of O_2 , addition of hydrogen. Metals are good reducing agent whereas non-metals are good oxidising agents. Metals can lose electrons easily to form cations. Non-metals gain electrons to form anions.

49. Which of the following is redox and displacement reaction?

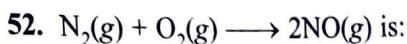
- (a) $\text{CaCO}_3 \xrightarrow{\Delta} \text{CaO} + \text{CO}_2$
- (b) $2\text{Ca} + \text{O}_2 \longrightarrow 2\text{CaO}$
- (c) $\text{Pb} + \text{CuCl}_2 \longrightarrow \text{PbCl}_2 + \text{Cu}$
- (d) $\text{NaOH} + \text{HCl} \longrightarrow \text{NaCl} + \text{H}_2\text{O}$



- (a) Combination reaction.
- (b) Redox reaction.
- (c) Calcium acts as reducing agent.
- (d) All of these



- (a) PbO_2 is oxidising agent.
- (b) PbO_2 is reducing agent.
- (c) HCl is oxidising agent.
- (d) All of these

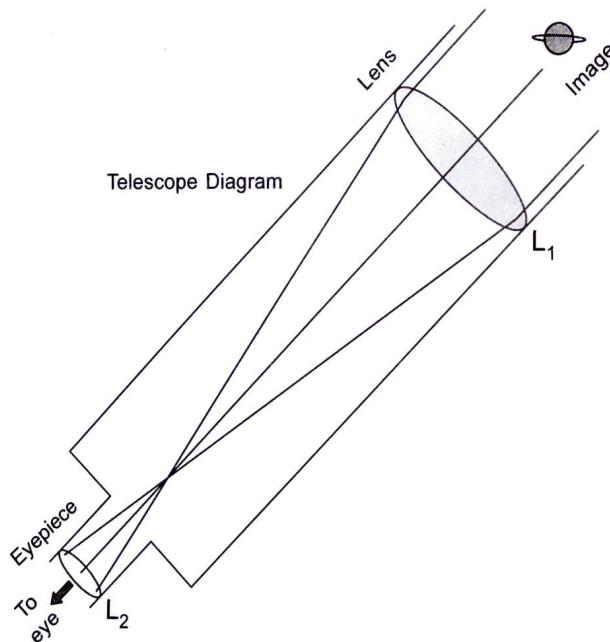


- (a) Exothermic
- (b) Endothermic
- (c) Displacement
- (d) None of these

II. 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, L_1 and L_2 . Out of which L_1 was bigger and L_2 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.



53. 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

54. If the powers of the lenses L_1 and L_2 are in the ratio of $4 : 1$, what would be the ratio of the focal length of L_1 and L_2 ?

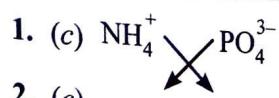
- (a) $4 : 1$
- (b) $1 : 4$
- (c) $2 : 1$
- (d) $1 : 1$

55. 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.
56. Sumati bought not-so-thick lenses for the telescope and polished them. What advantages, if any, would she have with her choice of lenses?
- (a) She will not have any advantage as even thicker lenses would give clearer images.
 - (b) Thicker lenses would have made the telescope easier to handle.
 - (c) Not-so-thick lenses would not make the telescope very heavy and also allow considerable amount of light to pass.
 - (d) Not-so-thick lenses will give her more magnification.

III. Lungs are the respiratory organs in humans and are located in the cavity of thorax. Human respiratory system consists of nostrils, nasal cavities, pharynx, trachea, bronchi, bronchioles leading to alveoli inside the lungs.

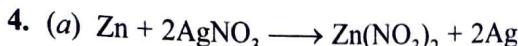
57. The respiratory organ of cockroach is:
- (a) Lung
 - (b) Air tubes
 - (c) Gills
 - (d) Skin
58. The double walled sacs where heart is enclosed is called:
- (a) Pericardium
 - (b) Diaphragm
 - (c) Pleura
 - (d) Glottis
59. _____ gas turns lime water milky.
- (a) Oxygen
 - (b) Nitrogen
 - (c) Sulphur dioxide
 - (d) Carbon dioxide
60. In plants, respiration takes place in _____
- (a) Root
 - (b) Stem
 - (c) Leaf
 - (d) All of above

Answers



2. (c)

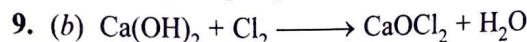
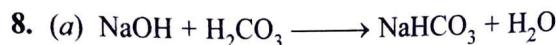
3. (d)



5. (d) In a combination reaction two or more substances combine to form a complex substance. It is decomposition reaction.

6. (a) pH of H_2O is 7 because it is neutral.

7. (b)



10. (b) Chemical equation represents chemical reaction with the help of symbols of elements and formulae of compounds.

11. (b)

12. (c)

13. (b)

14. (c)

15. (a)

16. (b) Liver is the largest gland associated with the alimentary canal of human beings.

17. (c) D R

18. (d)

19. (b) Virtual image

20. (c)

21. (c) Concave mirror forms erect and enlarged image when held close to the cavity.

22. (d)

23. (c)

24. (a) In medium B, light ray bends towards normal. It indicates that medium B is optically denser than medium A. Hence, speed of light in medium B is less than that in medium A.

Now, refractive index

$${}_{\text{A}}n_{\text{B}} = \frac{v_{\text{A}}}{v_{\text{B}}}$$

$$\text{As } v_{\text{B}} < v_{\text{A}} \Rightarrow \frac{v_{\text{A}}}{v_{\text{B}}} > 1$$

$$\therefore {}_{\text{A}}n_{\text{B}} > 1$$

25. (c)

26. (a)

27. (c)

28. (b)

29. (d)

30. (a)

31. (b) Both A and R are true and R is not the correct explanation of A

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. (c)

36. (b)

37. (a)

38. (a)

39. (b) Only concave mirror can produce a real image for any position of object between its focus and infinity.

40. (c) As $\mu = \frac{c}{v} \Rightarrow v = \frac{c}{\mu} = \frac{3 \times 10^8}{1.33} = 2.26 \times 10^8$ m/s

41. (d)

42. (b)

43. (d) When light ray travel from rarer to denser medium, its velocity and wavelength both decrease as Velocity (v) = Frequency (v) λ .

44. (c)

45. (b)

46. (a)

47. (b)

48. (d)

49. (c) Pb is displacing copper. Pb is reducing agent and Cu is oxidising agent.

50. (d) O₂ is oxidising agent.

51. (a) Pb⁴⁺ gains 2e to form Pb²⁺.

52. (b) It is endothermic, because NO is unstable.

53. (b)

54. (b) $P = \frac{1}{f}$

$$P_1 = \frac{1}{f_1} \text{ and } P_2 = \frac{1}{f_2}$$

$$\frac{P_1}{P_2} = \frac{4}{1}$$

$$\frac{\frac{1}{f_1}}{\frac{1}{f_2}} = \frac{4}{1}$$

$$\therefore \frac{f_1}{f_2} = \frac{1}{4} \quad \text{or} \quad 1 : 4$$

55. (a)

56. (c)

57. (b)

58. (a)

59. (d)

60. (d)

SAMPLE Paper 4

[Average Concept]

Time Allowed : 90 Minutes]

[Max. Marks : 40]

General Instructions:

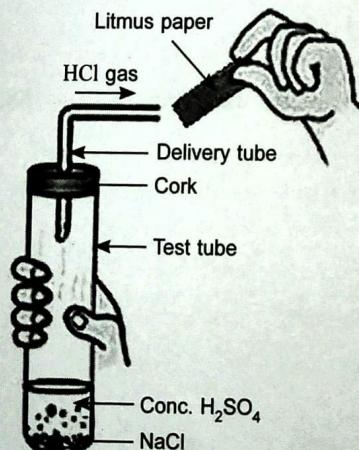
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3. Section B has 24 questions. Attempt any 20 questions.
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SECTION-A

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

The first attempted 20 questions would be evaluated.

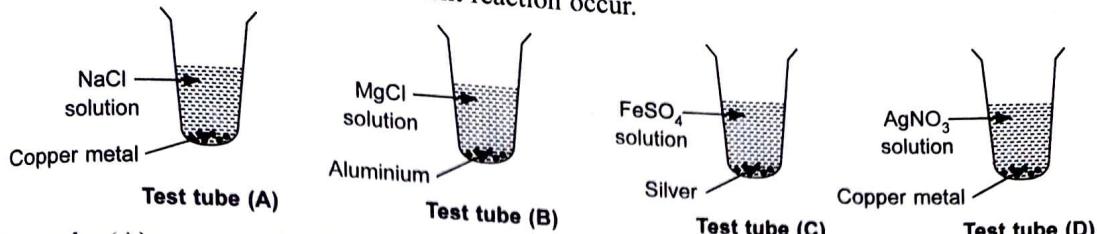
1. When SO_2 gas is passed through saturated solution of H_2S , which of the following reaction occurs?
 - (a) $\text{SO}_2 + 2\text{H}_2\text{S} \longrightarrow 2\text{H}_2\text{O} + 3\text{S}$
 - (b) $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow \text{H}_2\text{O} + 3\text{S}$
 - (c) $\text{SO}_2 + \text{H}_2\text{S} \longrightarrow \text{H}_2\text{O} + \text{S}$
 - (d) $\text{SO}_2 + \text{H}_2\text{O} \rightarrow \text{SO}_3 + \text{H}_2$
2. The figure given below represents the experiment carried out between conc. sulphuric acid and sodium chloride, which react with each other to form HCl gas.



Blue litmus paper is brought near the mouth of the delivery tube to check the presence of HCl acid but no change is observed in the color of litmus paper because:

- (a) The litmus paper used is dry
- (b) The litmus paper used is moist
- (c) Blue litmus paper does not change its color with an acid
- (d) The litmus paper is kept very close to the mouth of the delivery tube

3. Identify the test tube, in which displacement reaction occur.

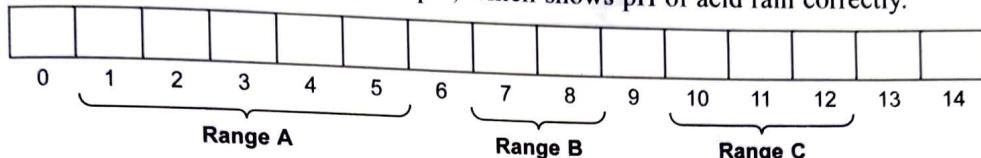


- (a) Test tube (A) (b) Test tube (B) (c) Test tube (C) (d) Test tube (D)

4. Which of the following gases can be used for storage?

- (a) Carbon dioxide or Oxygen (b) Nitrogen or Oxygen
 (c) Carbon dioxide or Helium (d) Helium or Nitrogen

5. From the given diagram choose the range of pH, which shows pH of acid rain correctly.



- (a) Range A (b) Range B (c) Range C (d) Range A and B both

6. An iron nail was dipped in a salt solution. After sometime a reddish brown deposition of the nail was seen. The salt solution could be

- (a) Silver nitrate (b) Sodium sulphate (c) Aluminium chloride (d) Copper sulphate

7. When ferrous sulphate is heated strongly name the gas evolved?

- (a) SO₂ (b) SO₃ (c) Fe₂O₃ (d) SO₂ and SO₃

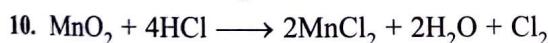
8. Which of the following phenomena occur, when a small amount of acid is added to water?

- I. Ionisation II. Neutralisation III. Dilution IV. Salt formation

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

9. Bleaching powder is used as a disinfectant for water to:

- (a) Make water tastier (b) Remove all the dirt from water
 (c) Make water germ-free (d) Make water clear

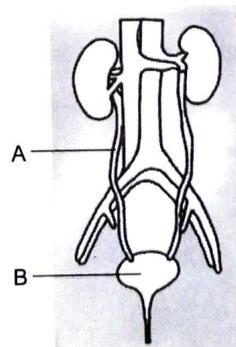


Identify the substance oxidized in the above equation.

- (a) MnCl₂ (b) HCl (c) H₂O (d) MnO₂

11. The diagram below represents urinary system in human body.

Identify part A and part B from given options.



- (a) A – Ureter, B – Urinary bladder
 (c) A – Urethra, B – Urinary bladder

- (b) A – Ureter, B – Urethra
 (d) None of the above.

12. Identify the instrument shown in given figure, from the following options:

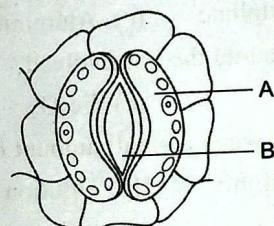


- (a) Monometer
- (b) Barometer
- (c) Pictometer
- (d) Sphygmomanometer

13. Movement of food through oesophagus is due to

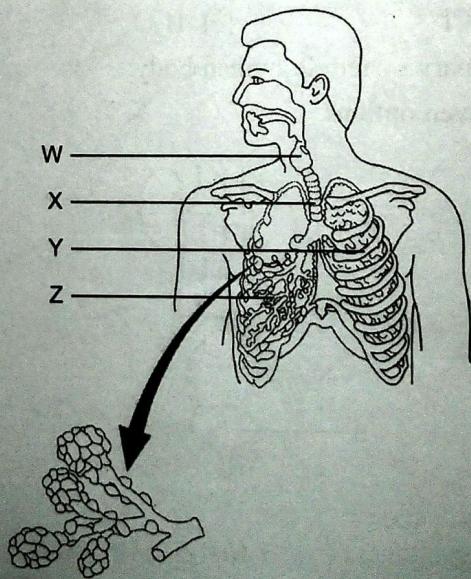
- (a) Lubrication by saliva
- (b) Peristalsis
- (c) Gravitational Pull
- (d) All of the above

14. The parts A and B Shown in the given diagram are:



- (a) Guard cell and stomatal pore
- (b) Epidermal cell and stomatal pore
- (c) Epidermal cell and guard cell
- (d) Guard cell and epidermal cell

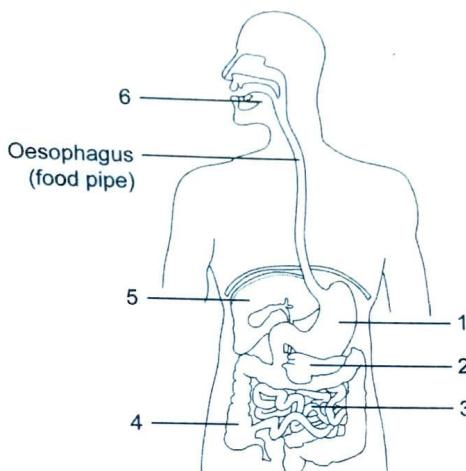
15. The diagram shows part of the human gas exchange system



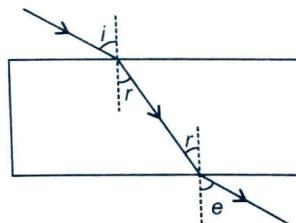
What are W, X, Y and Z?

	Bronchus	Bronchiole	Larynx	Trachea
(a)	W	X	Z	Y
(b)	X	Z	Y	W
(c)	Y	W	X	Z
(d)	Z	Y	W	X

16. The diagram shows the human gut. Which numbered structures secrete digestive enzymes:?



- (a) 1, 2, 3 and 4 (b) 1, 2, 3 and 6
(c) 2, 3, 4 and 5 (d) 2, 3, 5 and 6
17. A student selected the sun as a distant object to find the focal length of a concave mirror. His teacher advised him to use a screen of wood or hard cardboard. It is because
(a) white paper is not available in the lab.
(b) white paper is costlier than other papers
(c) white paper may start burning when sun rays converge on it.
(d) white paper scatters the light rays falling on it.
18. While performing the experiment on tracing the path of a ray of light passing through a glass slab as shown in the given diagram, four students interpreted the results as given below. Which one of the four interpretations is correct?



- (a) $\angle r > \angle i$ (b) $\angle r = \angle i$ (c) $\angle i = \angle r$ (d) $\angle i > \angle r$

19. Choose from given options, what type of image is formed on a cinema screen.

- (a) Real image (b) Virtual image
(c) Image not formed (d) None of the above
20. Reciprocal of focal length in metres is known as the _____ of a lens.
(a) focus (b) power
(c) power of accommodation (d) far point

21. A virtual image is formed by _____.

- (a) a slide projector in a cinema hall
- (c) a simple microscope

(b) the ordinary camera

(d) telescope

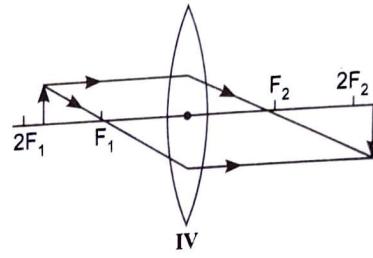
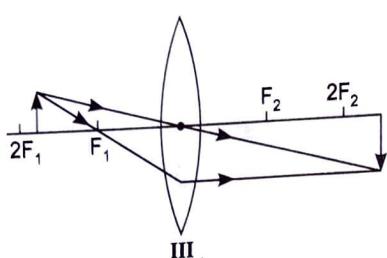
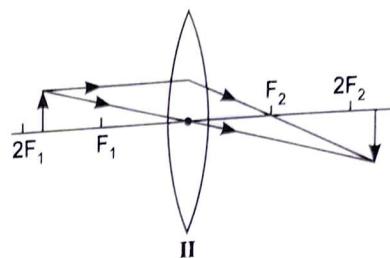
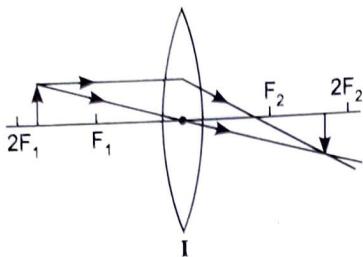
22. Which light is easily scattered?

- (a) Long wavelength light
- (c) Sunlight

(b) Short wavelength light

(d) Coherent light

23. Select the correct diagram(s) for the location of an image formed by a convex lens when the object is placed between F and 2F.



(a) I, II and III

(b) II, III and IV

(c) III, IV and I

(d) IV, I and II

24. How much refraction occurs in the ray passing through a prism?

(a) 1

(b) 4

(c) 3

(d) 2

SECTION-B

Section - B consists of 24 questions (Sr. No. 25 to 48). Attempt any 20 questions from this section.

The first attempted 20 questions would be evaluated.

This sample

25. When a drop of unknown solution X is placed on a strip of pH paper, a deep red colour is produced. This sample is of

(a) NaOH

(b) HCl

(c) Water

(d) CH_3COOH

26. Zinc reacts with an acid as well as with a base to liberate hydrogen gas. On the basis of this what should be the nature of the zinc metal?

(a) Basic

(b) Acidic

(c) Amphoteric

(d) Neutral

27. Choose the compound which is used for softening hard water.

(a) Washing soda

(b) Bleaching powder

(c) Baking soda

(d) Calcium oxide

28. Aluminium is used for making cooking utensils. Which of the following properties of aluminium are responsible for the same?

(i) Good thermal conductivity

(ii) Good electrical conductivity

(iii) Ductility

(iv) High melting point

(a) (i) and (ii)

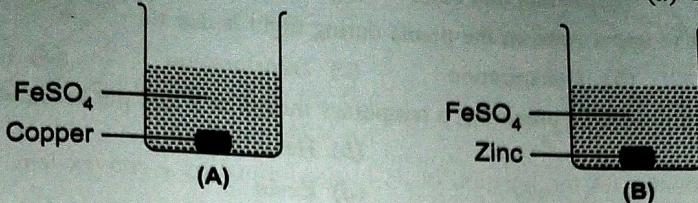
(b) (i) and (iii)

(c) (ii) and (iii)

(d) (i) and (iv)

29. A solution reacts with crushed egg-shells to give a gas that turns lime-water milky, the solution contains:
- NaCl
 - HCl
 - LiCl
 - KCl

30.



Two beakers A and B contain iron sulphate solution. In the beaker A is placed a small piece of copper and in the beaker B is placed a small piece of zinc. It is found that a grey deposit forms on the zinc but not on the copper. It is concluded that

- zinc is most active metal followed by iron and copper
- zinc is most active metal followed by copper and then iron
- iron is most active metal followed by zinc and copper
- iron is most active metal followed by copper and then zinc

Question No. 31 to 34 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- Both A and R are true and R is the correct explanation of A
- Both A and R are true and R is not the correct explanation of A
- A is true but R is false
- A is False but R is true

31. **Assertion:** Bleaching power liberates chlorine when kept in atmosphere.

Reason: CaOCl_2 reacts with CO_2 present in atmosphere to form CaCO_3 and chlorine gas.

32. **Assertion:** Combustion reaction is also called exothermic oxidation reaction.

Reason: In a combustion reaction O_2 is added and heat is released.

33. **Assertion:** The act of expelling the undigested food from the large intestine is called excretion.

Reason: The exit of undigested food is controlled by anal sphincter.

34. **Assertion:** The rainbow is an example of the dispersion of sunlight by the water droplets present in the atmosphere.

Reason: No other phenomenon of light occurs during the formation of rainbow.

35. What colour would hydrochloric acid ($\text{pH}=1$) turn universal indicator?

- Orange
- Purple
- Yellow
- Red

36. Loss of water from leaves will be less if stomata are

- Only on lower surface
- Only on upper surface
- On both the surfaces
- Scattered

37. Guard cells differ from epidermal cells in having

- Vacuoles
- Nucleus
- Mitochondria
- Chloroplasts

38. The plant part that do not involve in exchange of gas is

- Leaf
- Flower
- Root
- Stem

39. Choose the correct option regarding velocity of light in air.

- $3 \times 10^8 \text{ m/s}$
- $3 \times 10^9 \text{ m/s}$
- $2 \times 10^8 \text{ m/s}$
- $3 \times 10^7 \text{ m/s}$

40. If the magnification of a lens has positive value, the image is
(a) Real (b) virtual and erect (c) inverted (d) None of these
41. The transport of water to upper parts of the plants during night is due to
(a) Root pressure (b) Transpiration (c) Translocation (d) Leaf pressure
42. The stain that is generally used in preparing a temporary mount of a leaf put to show stomata is
(a) Safranin (b) Hematoxylin
(c) Acetocarmine (d) Eosin
43. The magnification produced by a rear view mirror that is used in the vehicles is
(a) less than 1 (b) more than 1
(c) equal to 1 (d) less than 1 or more than 1
44. The power of the lens is +2.5D. Its focal length in cm will be
(a) + 40 (b) - 40 (c) + 80 (d) - 80
45. An object is placed before a concave lens. The image formed _____.
(a) is always erect (b) may be erect or inverted
(c) is always inverted (d) is always real
46. The lens formula in cartesian frame is _____.
(a) $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$ (b) $\frac{1}{f} = \frac{1}{u} - \frac{1}{v}$ (c) $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$ (d) $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$
47. When a ray of light enters a medium B from medium A it is found to bend away from the normal. The refractive index of medium B with respect to A will be
(a) greater than unity (b) lesser than unity
(c) equal to unity (d) zero
48. Magnesium reacts with _____ water
(a) Cold (b) Hot
(c) Steam (d) None of these

SECTION-C

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.

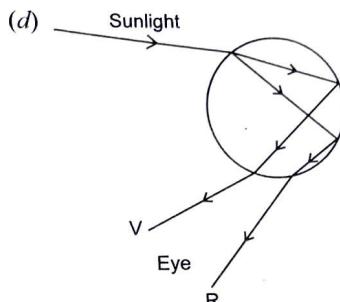
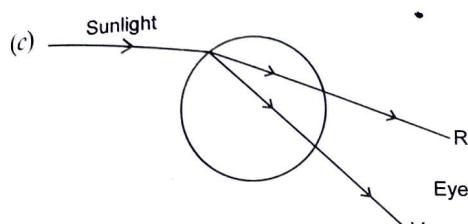
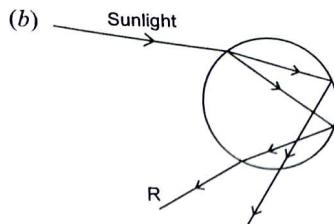
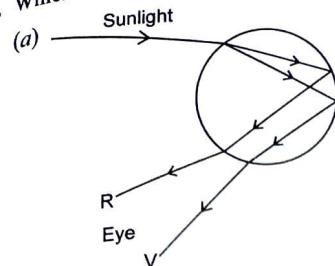
The first attempted 10 questions would be evaluated.

I. After studying the concept of reflection, refraction, dispersion and deviation of white light by the spherical water droplets, Sumiti understands how the light changes its direction and spreads out when it enters or exits water droplets.

With the help of these concepts, she got an idea for creating the rainbow in the house. On a very sunny day, she placed a large container filled with water near a window where plenty of sunlight was available. She sets a mirror under stagnant water in such a way that it reflects sunlight rays on the white wall or ceiling of the room. She succeeded in her experiment for creating the rainbow.

49. Which of the following phenomenon does not occur during the formation of rainbow?
(a) Reflection (b) Deviation
(c) Induction (d) Dispersion

50. Which of the following figure correctly depicts the formation of rainbow?



51. The necessary condition (s) for the formation of a rainbow is/are:

- (a) presence of water droplets in air and sunlight shining from behind.
 - (b) presence of water drops in atmosphere and sun must be in front of the observer.
 - (c) observer must stand with his back towards sun and presence of dry atmosphere.
 - (d) Observer must stand with his back towards the moon in the night with presence of moisture in the atmosphere.
52. Which of the following statements is correct regarding the propagation of light of different colours of white light in air?
- (a) Red light moves fastest.
 - (b) Blue light moves faster than green light
 - (c) All the colours of the white light move with the same speed.
 - (d) Yellow light moves with the mean speed as that of the red and the violet light.

II. Respiratory disease causes an immense worldwide health burden. It is estimated that 235 million people suffer from asthma, more than 200 million people have chronic obstructive pulmonary disease (COPD), 65 million endure moderate-to-severe COPD, more than 100 million adult population experience sleep disordered breathing, 8.7 million people develop tuberculosis (TB) annually, millions live with pulmonary hypertension and more than 50 million people struggle with occupational lung diseases. At least 2 billion people are exposed to the toxic effects of biomass fuel consumption, 1 billion are exposed to outdoor air pollution and 1 billion are exposed to tobacco smoke. Each year, 4 million people die prematurely from chronic respiratory disease. Infants and young children are particularly susceptible. Nine million children under 5 years of age die annually and lung diseases are the most common causes of these deaths. Pneumonia is the world's leading killer of young children. Asthma is the most common chronic disease, affecting about 14% of children globally and is still rising. COPD is the fourth leading cause of death worldwide and the numbers are growing. The most common lethal cancer in the world is lung cancer, which kills more than 1.4 million people each year, and the numbers are growing. Respiratory tract infections caused by influenza kill 250 000–500 000 people and cost 71–167 billion US dollars annually. Respiratory infections are ranked as the greatest single contributor to the overall burden of disease in the world.

53. Which of the following organ /part of human is affected during the disease tuberculosis?

- (a) Blood (b) Liver
(c) Lung (d) Brain

54. Exchange of gases during respiration takes place in

- (a) Bronchioles (b) Alveoli
(c) Diaphragm (d) Pleura

55. Identify the unmatched pair

- (a) Gills- Fish (b) Housefly- Skin
(c) Frog-Lungs (d) Cockroach-Air tubes

56. Chronic respiratory disease kills _____ people prematurely every year.

- (a) 235 million (b) 2 billion
(c) 4 million (d) 250000

III. The metal activity series lists metals according to their reactivity. The more reactive metals are placed at the top of the list. While the less reactive metals are placed near the bottom of the series. Hydrogen (a non-metal) is inserted into the list as a reference point. Metals, above hydrogen will react with dilute acids to produce hydrogen while metals below hydrogen will not. Metals carbonates and bicarbonates react with dil. acids to liberate colourless, odourless gas with brisk effervescence which turns lime water milky. If excess of gas is passed through lime water, milkiness disappears. Metallic oxides are basic in nature. Some metals form amphoteric oxides.

57. Which of the following reacts with acids as well as bases?

- (a) CuO (b) FeO (c) ZnO (d) Na₂O

58. The gas formed when limestone reacts with dil. H₂SO₄ is:

- (a) CO (b) CO₂ (c) SO₂ (d) None of these

59. Dilute sulphuric acid reacts with copper (II) oxide and copper (II) carbonate. In which ways are these two reactions similar?

- (a) A gas is formed.
(b) An insoluble salt is formed.
(c) Sulphuric acid acts as oxidising agent.
(d) Blue coloured solution is formed.

60. Which of the following is most reactive?

- (a) Na (b) K (c) Ca (d) Mg

Answers

1. (a)
2. (a)
3. (d) AgNO_3 solution and copper metal
4. (d) Nitrogen gas is also used as an antioxidant gas.
5. (a) 6. (d) 7. (a)
8. (b)
9. (c)
10. (d) In this reaction HCl is oxidised to Cl_2 , whereas MnO_2 is reduced to MnCl_2 .
11. (a) 12. (d)
13. (b) Peristalsis, it is a series of wave like muscle contractions that moves food to different processing situations in the digestive tract.
14. (a)
15. (d) 16. (b) 17. (c) 18. (d)
19. (a) 20. (c) 21. (c) 22. (b)
23. (b) 24. (d) 25. (b) 26. (c)
27. (a) 28. (d) 29. (b) 30. (a)
31. (a) Both A and R are true and R is the correct explanation of A
32. (a) Both A and R are true and R is the correct explanation of A
33. (d) A is False but R is true
34. (c) A is true but R is false
35. (d) 36. (a) 37. (d) 38. (b)
39. (a) 40. (b) 41. (a) 42. (a)
43. (a) 44. (a) 45. (a) 46. (c)
47. (b) 48. (b) 49. (c) 50. (a)
51. (a) 52. (c) 53. (c) 54. (b)
55. (b)
56. (c)
57. (c) It is amphoteric oxide.
58. (b) $\text{CaCO}_3 + \text{H}_2\text{SO}_4 \longrightarrow \text{CaSO}_4 + \text{H}_2\text{O} + \text{CO}_2$
59. (d) Blue coloured $\text{CuSO}_4(aq)$ is formed.
60. (b) K is largest in size, can lose electron easily therefore, most reactive.