

# 1

## PRACTICE PAPER

[Time Allowed: 90 Minutes]

[Maximum Marks: 40]

- General Instructions:**
- All questions are compulsory.
  - Each questions carries one mark.

### Multiple Choice Questions

1. Lead nitrate is heated in dry test tube. Which of the following observation is/are correct?
- (a) Brown  $\text{NO}_2$  gas and colourless  $\text{O}_2$  gas
  - (b)  $\text{NO}_2$  gas has pungent smell
  - (c) Yellow residue( $\text{PbO}$ )
  - (d) All of these

Ans. (d)  $2\text{Pb}(\text{NO}_3)_2 \xrightarrow{\text{heat}} 2\text{PbO}(s) + 4\text{NO}_2(g) + \text{O}_2(g)$

2. Complex molecules of starch are broken down to give simple sugar by enzyme \_\_\_\_\_.

- (a) Trypsin
- (b) Pepsin
- (c) Salivary Amylase
- (d) Lipase

Ans. (c)

3. In which part of the alimentary canal, digestion does not occur:

- (a) Stomach
- (b) Mouth
- (c) Large intestine
- (d) Small intestine

Ans. (c)

4. The nature of the mirror used in the headlights of a motor car is:

- (a) concave mirror
- (b) plane mirror
- (c) convex mirror
- (d) parabolic mirror

Ans. (a)

5. The phenomenon responsible for increasing the apparent length of the day by 4 minutes is:

- (a) atmospheric reflection
- (b) atmospheric refraction
- (c) scattering
- (d) dispersion

Ans. (b)

6. The air passage of human respiratory system does not collapse due to the presence of \_\_\_\_\_.

(a) Bony box      (b) Cartilage rings   (c) Air      (d) Strong muscles

Ans. (b)

7. A student perform the experiment on tracing the path of ray of light passing through the rectangular glass slab for different angle of incidence ( $\angle i$ ) and measure the corresponding angle of refraction ( $\angle r$ ) and angle of emergence ( $\angle e$ ). He would find that in all cases:

(a)  $\angle i$  is more than  $\angle r$  but (nearly) equal to  $\angle e$ .

(b)  $\angle i$  is less than  $\angle r$  but (nearly) equal to  $\angle e$ .

(c)  $\angle i$  is more than  $\angle e$  but (nearly) equal to  $\angle r$ .

(d)  $\angle i$  is less than  $\angle e$  but (nearly) equal to  $\angle r$ .

Ans. (a)

8. The danger signals make use of red light as it can be seen through a large distance. Because among all the colours, the red light:

(a) is scattered the most by smoke or fog.

(b) is least scattered while passing through the atmosphere.

(c) is absorbed while passing through the atmosphere.

(d) travels faster through the atmosphere.

Ans. (b)

9. Which of the following is basic in nature?

(a) Apple

(b) Strawberries

(c) Orange

(d) Banana

Ans. (d) Banana is basic in nature.

10. Acetic acid reacts with  $\text{NaHCO}_3$  to give:

(a) brisk effervescence due to  $\text{CO}_2$

(b) brisk effervescence due to  $\text{CH}_3\text{COONa}$

(c)  $\text{H}_2$  gas

(d) All of these

Ans. (a)  $\text{CH}_3\text{COOH} + \text{NaHCO}_3 \longrightarrow \text{CH}_3\text{COONa} + \text{H}_2\text{O} + \text{CO}_2$

11. Which of the following organs secretes bile in human digestive system?

(a) Pancreas

(b) Liver

(c) Kidney

(d) Heart

Ans. (b)

12. Two thin lenses of power +2.5D and -0.5D are placed in contact with each other. The power and focal length of the lens combination are \_\_\_\_\_, \_\_\_\_\_ respectively.

(a) +2D, 50 cm

(b) -2D, 50 cm

(c) +3D, 33.3 cm

(d) -3D, -33.3 cm

Ans. (a)

13. Which of the following mirrors produces a virtual images?

- (a) Plane mirror (b) Concave mirror  
(c) Convex mirror (d) All of these

Ans. (d)

14. The power of a concave lens of focal length 2 m is

- (a)  $-0.5\text{ D}$  (b)  $+0.5\text{ D}$  (c)  $-1.0\text{ D}$  (d)  $+1.0\text{ D}$

Ans. (a)

15. The deflection of light by minute particles and molecules of the atmosphere in all direction is called \_\_\_\_\_ of light.

- (a) dispersion (b) scattering (c) interference (d) tyndell effect

Ans. (b) The said phenomenon is called scattering of light.

## Assertion-Reasoning Type MCQs

For question numbers 16, 17, 18, 19 and 20 two statements are given-one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

- (a) Both A and R are true, and R is correct explanation of the assertion.  
(b) Both A and R are true, but R is not the correct explanation of the assertion.  
(c) A is true, but R is false.  
(d) A is false, but R is true.

16. Assertion (A): Carbonic acid is completely ionised in aqueous solution.

Reason (R): It is a weak acid.

Ans. (d) A is false, but R is true.

17. Assertion (A): Fluorine is a non-metal.

Reason (R): Fluorine has one valence electron.

Ans. (c) A is true, but R is false.

18. Assertion (A): Salts are formed by reaction of acid and base.

Reason (R): Salts may be acidic, basic or neutral.

Ans. (b) Both A and R are true, but R is not the correct explanation of the assertion.

19. Assertion: All proteins in our food are digested in small intestine only.

Reason: The protein digesting enzymes are released into small intestine and stomach.

Ans. (d) The statement of the Assertion is false but the Reason is true.

20. Assertion (A): When a stick is partially immersed in water and held obliquely, it appears to bend at water surface.

Reason (R): It is due to the refraction of light.

Ans. (a) Both A and R are true, and R is correct explanation of the assertion.

## Case-Based MCQs

Read the sources given below and answer the questions that follow.

Chemical changes generally involve chemical reactions. Chemical equation involve reactants written on LHS (left hand side) and products written on RHS (right hand side). Conditions of reactions are written on arrow head. Reactions are classified into combination, decomposition, displacement, double displacement and redox depending upon reactants, products. Chemical equations must be balanced so as to satisfy law of conservation of mass.

21. Which of the following is true about  $\text{CaO} + \text{H}_2\text{O} \longrightarrow \text{Ca(OH)}_2$ ?

- (a) Redox reaction
- (b) Exothermic reaction
- (c) Endothermic reaction.
- (d) Displacement reactions

Ans. (b) It is exothermic reaction.

22.  $2\text{H}_2(\text{g}) + \text{O}_2(\text{g}) \longrightarrow 2\text{H}_2\text{O}(\text{l})$  is an example of:

- (a) Redox reaction
- (b) Endothermic reaction
- (c) Displacement reactions
- (d) Decomposition reaction.

Ans. (a)  $\text{H}_2$  is reducing agent,  $\text{O}_2$  is oxidising agent.

23.  $\text{CaCO}_3(\text{s}) \xrightarrow{\Delta} \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$  is a:

- (a) Decomposition reaction
- (b) Endothermic reaction
- (c) Exothermic reaction
- (d) Both (a) and (b)

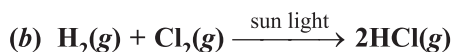
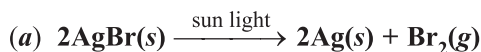
Ans. (d) It is decomposition and endothermic reaction.

24.  $\text{Zn}(\text{s}) + 2\text{HCl}(\text{dil}) \longrightarrow \text{ZnCl}_2(\text{aq}) + \text{H}_2$  represents:

- (a) Displacement reaction
- (b) Redox reaction
- (c) Exothermic reaction
- (d) All of these

Ans. (d)

25. Which of the following is photochemical decomposition reaction?



(c) Photosynthesis

(d) All of these

Ans. (a)

Living bodies eliminate harmful metabolic waste products by a process. Many unicellular organisms remove these wastes by simple diffusion from the body surface into the surrounding. Complex multicellular organisms use specialized organs for excretion.

**26. The process which helps in artificial removal of waste from body is known as:**

- |                      |                           |
|----------------------|---------------------------|
| <b>(a) Excretion</b> | <b>(b) Kidney</b>         |
| <b>(c) Dialysis</b>  | <b>(d) Transportation</b> |

**Ans.** (a)

**27. Which of the following statement regarding human being is true?**

- (a) Both the kidneys are at same level.**
- (b) Left kidney is placed higher than the right kidney.**
- (c) Right kidney is placed higher than left kidney.**
- (d) There is no definite rule on placement of kidneys.**

**Ans.** (b)

**28. Which of the following statement is not true?**

- (a) Urethra conducts urine from bladder to outside.**
- (b) Kidneys remove poisonous substances.**
- (c) Renal artery carries away uncleaned blood from the kidneys.**
- (d) Kidneys regulate osmotic pressure of the blood.**

**Ans.** (c)

**29 Bowman's capsule contains**

- |                       |                         |
|-----------------------|-------------------------|
| <b>(a) Nephron</b>    | <b>(b) Glomerulus</b>   |
| <b>(c) Renal vein</b> | <b>(d) Renal artery</b> |

**Ans.** (b)

**30. Fill up the blank:**

\_\_\_\_\_ in stem removes gaseous wastes in the air.

- |                      |                    |
|----------------------|--------------------|
| <b>(a) Lenticels</b> | <b>(b) Stomata</b> |
| <b>(c) Xylem</b>     | <b>(d) Phloem</b>  |

**Ans.** (a)

Optics is the "Science of light and sight". Two major branches of optics are physical optics and geometrical optics.

- Physical optics deals with the nature and properties of light itself.
- The geometrical Optics is describes the propagation of light in terms of rays and formation of images by lenses and mirrors.

In 1841 the great mathematician ‘Carl Friedrich Gauss’ published his classical book on geometrical optics. In it, he expounded the concept of the focal length and cardinal points of a lens system and developed formulas for calculating the position and size of the image formed by a lens of given focal length.

**The application, the use of optics in various gadgets made our life easy and comfortable.**

**31. The mirror that can be used to check theft in shops is**

- (a) concave mirror
- (b) parabolic mirror
- (c) plane mirror
- (d) convex mirror

**Ans. (d)**

**32. According to New Cartesian sign conventions, the sign assigned to the focal length of a concave and convex lens, respectively, is**

- (a) negative and positive
- (b) positive and negative
- (c) both positive
- (d) both negative

**Ans. (a)**

**33. The law of reflection hold good for**

- (a) plane mirror only
- (b) convex mirror only
- (c) concave mirror only
- (d) light reflected from any smooth surface irrespective of their shapes.

**Ans. (d)**

**34. When a light travels from denser to rarer medium, it will**

- (a) bend towards normal.
- (b) bend away from the normal.
- (c) reflected back to the denser medium again.
- (d) pass straight without bending.

**Ans. (b)**

**35. Rays from the sun converge at a point 15 cm on a screen placed on the other side of the lens. Where should an object be placed so that size of its inverted image is equal to the size of the object?**

- (a) 15 cm in front of the lens.
- (b) 30 cm in front of the lens.
- (c) between 15 cm and 30 cm in front of the lens.
- (d) More than 30 cm in front of the lens.

**Ans. (b)**

Metals are solids except mercury. They have high melting and boiling points except Na, K, Rb. They are good conductor of electricity. Reactive metals react with water and liberate  $H_2$  gas. Most reactive metals Na, K, Ca react with cold water, Mg and Zn react with hot water. Iron and aluminium react with steam, copper, silver, gold do not react even with steam. Metals react with non-metals to form ionic compounds.

**36. Which of the following will melt in palm?**

- (a) Na (b) K  
(c) Ga (d) All of these

**Ans.** (c) Gallium will melt in palm.

**37. Which of the following react less vigorously with cold water and floats in water?**

- (a) Na (b) K  
(c) Ca (d) All of these

**Ans.** (c)

**38. Which of the following is not an ionic compound?**

- (a) NaCl (b) KCl  
(c)  $CaCl_2$  (d)  $CH_4$

**Ans.** (d)  $CH_4$  is covalent compound.

**39. Ionic compounds:**

- (a) formed by metals and non-metals.  
(b) conduct electricity in aqueous solution.  
(c) do not conduct electricity in solid state.  
(d) All of these.

**Ans.** (d)

**40. 'Al' reacts with steam to form:**

- (a)  $Al(OH_3) + H_2$   
(b)  $Al_2O_3 + H_2$   
(c)  $Na[Al(OH)_4] + H_2$   
(d) None of these

**Ans.** (c)  $(b) 2Al(s) + 3H_2O(g) \xrightarrow{\Delta} Al_2O_3(s) + 3H_2(g)$   
(Steam)

# 2

# PRACTICE PAPER

[Time Allowed: 90 Minutes]

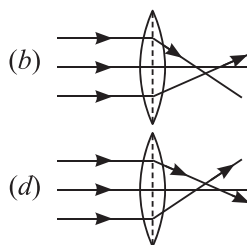
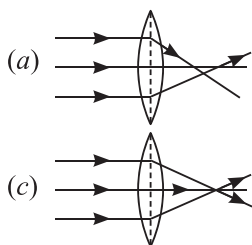
[Maximum Marks: 40]

- General Instructions:**
- All questions are compulsory.
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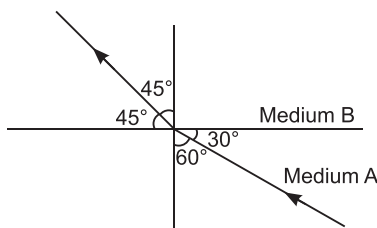
## Multiple Choice Questions

1. Which of the following is Gypsum?  
(a)  $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$  (b)  $\text{CaSO}_4 \cdot \text{H}_2\text{O}$  (c)  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$  (d)  $\text{CaSO}_4 \cdot 3\text{H}_2\text{O}$
2. Transport of food from leaves to other part of the plant is called  
(a) Transpiration (b) Excretion (c) Translocation (d) Digestion
3. Acetic acid reacts with  $\text{NaHCO}_3$  to give:  
(a) brisk effervescence due to  $\text{CO}_2$   
(b) brisk effervescence due to  $\text{CH}_3\text{COONa}$   
(c)  $\text{H}_2$  gas  
(d) All of these
4. Which of the following is not an excretory product of plant?  
(a) Nitrogen (b) Oxygen (c) Carbon dioxide (d) Water
5. What is the formula for magnification obtained with a lens?  
(a) Ratio of height of image to the height of object.  
(b) Ratio of height of object to the height of image.  
(c) Ratio of object distance to the image distance.  
(d) Ratio of sine of angle of incidence to the sine of angle of refraction.
6. For negative value of magnification, the nature of the image produced by convex lens is:  
(a) virtual and inverted (b) virtual and erect  
(c) real and erect (d) real and inverted
7. Iodine is necessary to activate \_\_\_\_\_.  
(a) Adrenal gland (b) Pituitary gland  
(c) Parathyroid gland (d) Thyroid gland

8. A simple magnifying lens is used by watch repairer in such a way that an image is formed at 25 cm away from the eye. If he want to increase the magnification by 10 times, then the focal length of the lens should be:  
 (a) 2.7 cm (b) 2.7 mm (c) 27 cm (d) 10 cm
9. A converging lens is used to form a sharp image of an object. If the lower half of a lens is blackened, than the:  
 (a) same intensity of image will appear again  
 (b) image will become dimmer  
 (c) lower half of the image will disappear  
 (d) image is not formed on the screen
10. What is the name of indicator which gives different smell in different medium?  
 (a) Natural indicator (b) Synthetic indicator  
 (c) Olfactory indicator (d) Universal indicator
11. The colour of universal indicator in *aq.* solution of  $\text{Na}_2\text{CO}_3$  will be:  
 (a) red (b) yellow (c) blue (d) green
12. Which of the following is not a type of salivary gland?  
 (a) Parotide (b) Maxil (c) Sub Maxillary (d) Sublingual
13. Mucus is secreted by:  
 (a) Liver (b) Salivary Gland (c) Gastric Gland (d) Pancreas
14. The distance between the optical centre and point of convergence is called focal length in which of the following cases?



15. Figure shows a ray of light as it travels from medium A to medium B. Refractive index of the medium B relative to medium A is



- (a)  $\frac{\sqrt{3}}{\sqrt{2}}$  (b)  $\frac{\sqrt{2}}{\sqrt{3}}$  (c)  $\frac{1}{\sqrt{2}}$  (d)  $\sqrt{2}$

16. A full length image of a distant tall building can definitely be seen by using
- (a) a concave mirror (b) a convex mirror
- (c) a plane mirror (d) both concave as well as plane mirror

## Assertion-Reasoning Type MCQs

For question numbers 17, 18, 19 and 20, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

- (a) Both A and R are true, and R is correct explanation of the assertion.
- (b) Both A and R are true, but R is not the correct explanation of the assertion.
- (c) A is true, but R is false.
- (d) A is false, but R is true.
17. **Assertion:** Copper is more reactive than hydrogen.  
**Reason:** Copper does not react with dil.  $\text{H}_2\text{SO}_4$ .
18. **Assertion (A):** Bleaching powder liberate chlorine when kept in atmosphere.  
**Reason (R):**  $\text{CaOCl}_2$  reacts with  $\text{CO}_2$  present in atmosphere to form  $\text{CaCO}_3$  and chlorine gas.
19. **Assertion:** Sky appears blue.  
**Reason:** Blue colour has shorter wavelength, so scatters more than light of other colour.
20. **Assertion:** At noon, the sun appears white.  
**Reason:** Violet colour is scattered the most.

## Case-Based MCQs

Read the sources given below and answer the questions that follow.

Redox reactions are reactions in which oxidation and reduction take place simultaneously. Oxidation involves loss of electrons, addition of  $\text{O}_2$ , removal of  $\text{H}_2$ . Reduction involves gain of electrons, removal of  $\text{O}_2$ , addition of hydrogen. Metals are good reducing agent where as non-metals are good oxidising agents. Metals can lose electrons easily to form cations. Non-metals gain electrons to form anions.

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

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

22.  $2\text{Ca} + \text{O}_2(\text{g}) \longrightarrow 2\text{CaO}$ . It is example of  
 (a) Combination reaction. (b) Redox reaction.  
 (c) Calcium acts as reducing agent. (d) All of these
23.  $2\text{KMnO}_4 \xrightarrow{\Delta} \text{K}_2\text{MnO}_4 + \text{MnO}_2 + \text{O}_2$ .  
 It is :  
 (a) redox as well as decomposition reaction  
 (b) combination reaction.  
 (c) displacement reaction.  
 (d) None of these
24.  $\text{PbO}_2 + 4\text{HCl} \longrightarrow \text{PbCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$ , in this reaction  
 (a)  $\text{PbO}_2$  is oxidising agent. (b)  $\text{PbO}_2$  is reducing agent.  
 (c)  $\text{HCl}$  is oxidising agent. (d) All of these
25.  $\text{N}_2(\text{g}) + \text{O}_2(\text{g}) \longrightarrow 2\text{NO}(\text{g})$  is:  
 (a) Exothermic (b) Endothermic  
 (c) Displacement (d) None of these

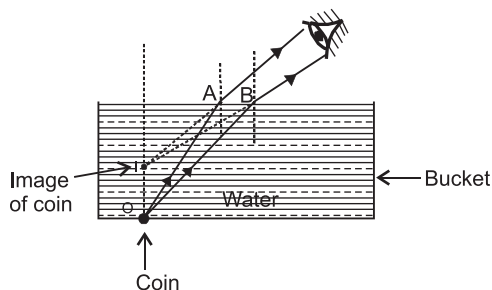
Reactive metals displace hydrogen from dil.  $\text{H}_2\text{SO}_4$  and dil.  $\text{HCl}$  but not dil.  $\text{HNO}_3$ . Those metals which are less reactive than hydrogen do not displace hydrogen from dilute acids. Conc.  $\text{H}_2\text{SO}_4$  is an oxidising agent. Dil.  $\text{HNO}_3$  is also an oxidising agent. Copper does not react with dil.  $\text{H}_2\text{SO}_4$  but it reacts with conc.  $\text{H}_2\text{SO}_4$ . Metals react with dil.  $\text{HNO}_3$  to form  $\text{NO}$  and conc.  $\text{HNO}_3$  to give  $\text{NO}_2$ , which is acidic and brown in colour. Non-metals form acidic oxides.

26. Which of the following will not displace  $\text{H}_2$  from dil  $\text{HCl}$ ?  
 (a)  $\text{Ag}$  (b)  $\text{Au}$   
 (c)  $\text{Cu}$  (d) All of these
27. Which of the following will react with steam only?  
 (a)  $\text{Na}$  (b)  $\text{Fe}$   
 (c)  $\text{Zn}$  (d)  $\text{Mg}$
28. Which of the following gives  $\text{H}_2$  with 5%  $\text{HNO}_3$ ?  
 (a)  $\text{Mn}$  (b)  $\text{Zn}$   
 (c)  $\text{Cu}$  (d)  $\text{Ag}$
29. Which of the following is not an acidic oxide?  
 (a)  $\text{NO}_2$  (b)  $\text{SO}_2$   
 (c)  $\text{SO}_3$  (d)  $\text{NO}$
30. Which of the following is most basic oxide?  
 (a)  $\text{MgO}$  (b)  $\text{CO}_2$   
 (c)  $\text{B}_2\text{O}_3$  (d)  $\text{SiO}_2$

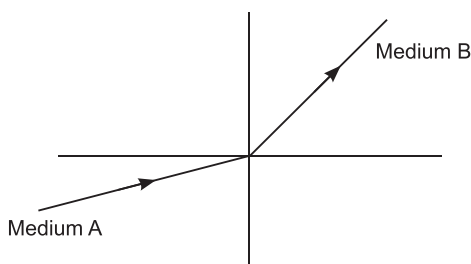
During photosynthesis, green plants synthesise organic materials they require from inorganic source. Light is a source of energy for this synthesis.

31. Photolysis of water takes place during:
- (a) Light reaction
  - (b) Dark Reaction
  - (c) Both (a) and (b)
  - (d) None of above
32. Chloroplast are normally:
- (a) Round
  - (b) Circular
  - (c) Square
  - (d) Lens shaped
33. Gas released during photosynthesis is:
- (a) Oxygen
  - (b) Carbon dioxide
  - (c) Sulphur dioxide
  - (d) Nitrogen
34. Which of the following is not true?
- (a)  $\text{CO}_2$  is essential for photosynthesis.
  - (b)  $\text{O}_2$  is essential for photosynthesis.
  - (c) Sunlight is essential for photosynthesis.
  - (d) Water is essential for photosynthesis.
35. Chloroplast containing organelle are called:
- (a) Plastid
  - (b) Lysosome
  - (c) Stomata
  - (d) Guard cells

When the coin is under water, then due to refraction of light, a virtual image of the coin is formed which is slightly above its actual position nearer to water surface as shown in figure. This is because the light rays coming from coin and then go from water to air, they deviate from their path and get deflected away from the normal. Backward extension of these refracted ray appear to meet at point 'I', the image of the coin.



36. A light ray enters from medium A to medium B as shown in figure. The refractive index of medium A relative to B will be



- (a) greater than unity (b) less than unity  
(c) equal to unity (d) zero
37. A torch submerged in water sends a light beam towards the surface of water at an angle of incidence of  $30^\circ$ . The angle of refraction in air is:  
(a) greater than  $30^\circ$  but less than  $45^\circ$ . (b) less than  $30^\circ$   
(c) equal to  $30^\circ$  (d) equal to  $0^\circ$
38. The change in a light ray's direction when it passes through the variations in matter is called:  
(a) reflection (b) refraction  
(c) defraction (d) None of these
39. We can distinguish a medium to be optically rarer or optically denser on the basis of:  
(a) bending of light. (b) velocity of light in the medium.  
(c) refractive index of the medium. (d) All of the above.
40. The property which remains unchanged during refraction of light is:  
(a) wavelength (b) speed of light  
(c) frequency (d) All of the above.

## ANSWERS

1. (c)  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$  is called gypsum.  $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$  is plaster of paris.

2. (c)

3. (a)  $\text{CH}_3\text{COOH} + \text{NaHCO}_3 \longrightarrow \text{CH}_3\text{COONa} + \text{H}_2\text{O} + \text{CO}_2$

4. (a) 5. (a) 6. (d) 7. (d)

8. (a) Magnification,  $m = \frac{v}{u} \Rightarrow 10 = \frac{-25}{u} \Rightarrow u = -2.5 \text{ cm}$

Using  $\frac{1}{f} = \frac{1}{v} - \frac{1}{u} = \frac{1}{-25} - \frac{1}{-2.5} = \frac{9}{25} \therefore f = \frac{25}{9} = 2.7 \text{ cm}$



# 3

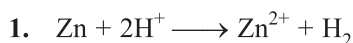
## PRACTICE PAPER

[Time Allowed: 90 Minutes]

[Maximum Marks: 40]

- General Instructions:**
- All questions are compulsory.
  - Each questions carries one mark.

### Multiple Choice Questions



In this reaction:

- (a) Zn is reducing agent.
  - (b)  $\text{H}^+$  are oxidising agent.
  - (c) It is redox reaction.
  - (d) All of these.
2. The largest gland in man is
- (a) Intestinal gland
  - (b) Oesophagous
  - (c) Salivary Gland
  - (d) Liver
3. What is observed when a solution of potassium iodide is added to silver nitrate solution?
- (a) No reaction takes place
  - (b) White precipitate of silver iodide is formed
  - (c) Yellow precipitate of AgI is formed
  - (d) AgI is soluble in water.
4. Which of the following is not an enzyme released by Pancreas?
- (a) Pepsin
  - (b) Amylase
  - (c) Trypsin
  - (d) Lipase
5. A converging lens is used to form a sharp image of an object. If the lower half of a lens is blackened, than the:
- (a) same intensity of image will appear again
  - (b) image will become dimmer
  - (c) lower half of the image will disappear
  - (d) image is not formed on the screen
6. If the incident ray passes through the focus of a concave mirror, the reflected ray will:
- (a) pass through the centre of curvature
  - (b) retrace its path
  - (c) be parallel to the principal axis
  - (d) meet at point on a principal axis at a distance equal to 2C from pole.

7. Starch is converted to Maltose by the action of
  - (a) Salivary Amylase
  - (b) Erepsin
  - (c) Sucrase
  - (d) Lipase
8. A full length image of a distant tall tower can definitely be seen by using:
  - (a) a plane mirror
  - (b) a concave mirror
  - (c) both plane and concave mirror
  - (d) convex mirror
9. Which of the following mirror is used as side mirror in a vehicle?
  - (a) Concave
  - (b) Convex
  - (c) Plane
  - (d) Planoconvex
10. The brown gas evolved on heating of copper nitrate is
  - (a)  $O_2$
  - (b)  $NO_2$
  - (c)  $N_2$
  - (d) NO
11. In a double displacement reaction such as the reaction between sodium sulphate solution and barium chloride solution:
  - (a) exchange of atoms takes place
  - (b) exchange of ions takes place
  - (c) a precipitate is produced
  - (d) an insoluble salt is produced

The correct option is:

  - (a) (B) and (D)
  - (b) (A) and (C)
  - (c) only (B)
  - (d) (B), (C) and (D)
12. Starch is converted to Maltose by the action of
  - (a) Salivary Amylase
  - (b) Erepsin
  - (c) Sucrase
  - (d) Lipase
13. If the image formed in a concave mirror is of the same size of object, then the object is placed at
  - (a) focus
  - (b) centre of curvature
  - (c) behind the mirror
  - (d) infinity
14. When light travels from rarer to denser medium
  - (a) it bends towards the normal
  - (b) it bends away from the normal
  - (c) it passes straight
  - (d) it returns in the same medium
15. Which of the following lenses forms virtual and magnified image?
  - (a) Concave lens
  - (b) Convex lens
  - (c) Both (a) and (b)
  - (d) None of these
16. Which of the following components of light is least scattered by fog?
  - (a) Violet
  - (b) Blue
  - (c) Red
  - (d) Yellow

## Assertion-Reasoning Type MCQs

For question numbers 17, 18, 19 and 20, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

- (a) Both A and R are true, and R is correct explanation of the assertion.
  - (b) Both A and R are true, but R is not the correct explanation of the assertion.
  - (c) A is true, but R is false.
  - (d) A is false, but R is true.
17. **Assertion (A):** When dilute sulphuric acid reacts with zinc metal, then zinc sulphate and hydrogen gas are formed.  
**Reason (R):** Most of the dilute acids except  $\text{HNO}_3$  react with reactive metals to form salts and evolve hydrogen gas.
18. **Assertion (A):** A reaction in which a substance is decomposed into two or more simpler products is known as decomposition reaction.  
**Reason (R):** The decomposition of substance is impossible without supplying energy.
19. **Assertion (A):** The acid found in our stomach is hydrochloric acid.  
**Reason (R):** Stomach acids activates the enzyme pepsin for digestion of protein.
20. **Assertion (A):** A real image can be obtained on a screen.  
**Reason (R):** A concave mirror always forms real images.

## Case-Based MCQs

Read the sources given below and answer the questions that follow.

Equal volumes of hydrochloric acid and sodium hydroxide solution of same concentration are mixed and the pH of resulting solution is checked. If pH is less than 7 solution will be acidic, if  $\text{pH} = 7$ , the solution will be neutral and if pH is greater than 7, solution will be basic. Universal indicator is used to determine strength of acid and base. It gives different colour of different pH. pH is very important in our daily life. Our stomach has acidic pH. Blood is slightly basic. If pH is less than 7 in our mouth, tooth decay starts.

|     |   |   |   |   |   |       |   |   |    |    |    |    |      |
|-----|---|---|---|---|---|-------|---|---|----|----|----|----|------|
| 1   | 2 | 3 | 4 | 5 | 6 | 7     | 8 | 9 | 10 | 11 | 12 | 13 | 14   |
| Red |   |   |   |   |   | Green |   |   |    |    |    |    | Blue |

21. What colour is obtained on pH paper when equal volume of NaOH and HCl react if they have same concentration?
- (a) red
  - (b) yellowish green
  - (c) blue
  - (d) orange

22. The pH of resulting solution in the above reaction will be:  
 (a) less than 7 (b) more than 7  
 (c) equal to 7 (d) 14
23. What is pH of distilled water?  
 (a)  $< 7$  (b)  $> 7$   
 (c)  $= 7$  (d)  $= 6$
24. Universal indicator is:  
 (a) Phenolphthalein (b) Methyl orange  
 (c) Litmus (d) Mixture of indicators
25. If we have hyperacidity, medicine used is:  
 (a) Antibiotic (b) Antacid  
 (c) Analgesics (d) Antipyretic

The heart is a pumping organ that receives blood from the veins and pumps it into the arteries. It is situated in the thoracic cavity which lies above the diaphragm between the two lungs. It is enclosed in a double walled membraneous sac.

26. The double walled membraneous sac within which the heart is enclosed is called:  
 (a) Vena cava (b) Atria  
 (c) Diaphragm (d) Pericardium
27. The pacemaker of human heart is located at:  
 (a) Upper wall of right ventricle (b) Lower wall of right ventricle  
 (c) Upper wall of right atrium (d) Lower wall of right atrium
28. Which of the following statement is true?  
 (a) Heart valves are tricuspid  
 (b) Heart valves are bicuspid  
 (c) Valves on the right side of the heart are tricuspid and that on left side are bicuspid.  
 (d) Valves on right side of the heart are bicuspid and that on left side are tricuspid.
29. Which of the following statement is not true?  
 (a) Oxygenated blood returns to the heart via pulmonary artery.  
 (b) The largest artery is called aorta.  
 (c) Blood passes through human heart twice in one complete cycle.  
 (d) Heart receives deoxygenated blood through vena cava.
30. The instrument that measures blood pressure is called:  
 (a) Stethoscope (b) Sphygmomanometer  
 (c) Hydrometer (d) Barometer

The foundation of modern optics lays in 1672 when Sir Isaac Newton publishes his paper on the bending of light through prism. His experiments in bending of light through prisms led, eventually, to the revolutionary discovery of the existence in white light of a mixture of distinct coloured rays, distinguishable when refracted through a prism of transparent material. In his experiment, he set up a prism near his window, and projected a beautiful spectrum onto the far wall at 22 feet away. Further, to prove that the prism was not colouring the light, he refracted the light back together. Prisms are made from transparent materials such as glass, plastic and fluorite and are in different forms and shapes, depending on the application. They are usually categorised based on the shapes of their bases.

Prism has the capacity to reverse the direction of light by internal reflection and redirect the light at a defined angle. It is mostly used in telescopes, periscopes and microscopes, binoculars, and monoculars. Prism spectrometer is used to measure the deviations of light for various wavelengths.

31. The different components of white light deviate through different angles when passing through a triangular glass prism is due to
  - (a) change in refractive index offered by the prism medium.
  - (b) scattering takes place due to the absence of atmosphere.
  - (c) same refractive index offered by the prism medium to each colour ray.
  - (d) internal reflection.
32. When white light is passed through a hollow prism:
  - (a) only dispersion
  - (b) only deviation
  - (c) both dispersion and deviation
  - (d) neither dispersion nor deviation
33. Which of the following colours of white light deviated least when passes through a triangular glass prism?
  - (a) violet light
  - (b) yellow light
  - (c) red light
  - (d) green light
34. When we place a combination of two identical prisms arranged together in inverted position with respect to each other in the path of narrow beam of white light, the emergent beam from the other side of the second prism is of:
  - (a) white light
  - (b) yellow light
  - (c) red light
  - (d) violet light
35. The prism is said to be in minimum deviation position only when the angle of incidence is such that the refracted ray inside the prism is:
  - (a) at  $45^\circ$  to the base of the prism
  - (b) reflected back from the other side of prism
  - (c) parallel to the base of the prism
  - (d) perpendicular to the base of the prism

Ionic bond is formed by loss of electrons by metal and gain of electrons by non-metal. Ionic compound exist as crystalline solids, high melting point, soluble in water. Ionic compound do not conduct electricity in solid state but conduct electricity in aqueous solution and in molten state. Reactivity of metals depends upon tendency to lose electrons.

36. Which of the following has highest melting point?  
(a) NaCl (b) CCl<sub>4</sub>  
(c) CH<sub>4</sub> (d) C<sub>2</sub>H<sub>6</sub>
37. Which of the following metal is most reactive?  
(a) Zn (b) Cu  
(c) Fe (d) Ag
38. Ionic compounds are formed between:  
(a) Group 1 and 17 (b) Group 13 and 17  
(c) Group 14 and 17 (d) Group 14 and 16
39. Which of the following is most malleable and ductile?  
(a) Pb (b) Na  
(c) Au (d) Cu
40. Which of the following will react fastest with dil. HCl?  
(a) Mg (b) Zn  
(c) Fe (d) Cu

## ANSWERS

- (d) Zn can lose electrons, H<sup>+</sup> gain electrons, therefore, it is redox reaction.
- (a) Intestinal gland
- (c)  $\text{AgNO}_3(aq) + \text{KI}(aq) \longrightarrow \text{AgI}(s) + \text{KNO}_3(aq)$
- (c)
- (b)
- (c)
- (d)
- (d)
- (b)
- (b)  $2\text{Cu}(\text{NO}_3)_2(s) \xrightarrow{\Delta} 2\text{CuO}(s) + 4\text{NO}_2(g) + \text{O}_2(g)$
- (d) Exchange of ions takes place, an insoluble salt i.e precipitate is formed.
- (d)

13. (b)
14. (a)
15. (b)
16. (c)
17. (a) Both A and R are true, and R is correct explanation of the assertion.
18. (b) Both A and R are true, but R is not the correct explanation of the assertion.
19. (b) Both A and R are true, but R is not the correct explanation of the assertion.
20. (c) A is true, but R is false.
21. (b) Yellowish green because solution is neutral.
22. (c) equal to 7
23. (c)  $\text{pH} = 7$  for distilled water because it is neutral.
24. (d) Universal indicator is mixture of indicators.
25. (b) It is called antacid, which neutralises hyperacidity in stomach.
26. (d)
27. (c)
28. (c)
29. (a)
30. (b)
31. (a)
32. (d)
33. (c)
34. (a)
35. (c)
36. (a) NaCl is ionic compound having strong forces of attraction between  $\text{Na}^+$  and  $\text{Cl}^-$  ions.
37. (a)
38. (a) Group 1 can lose electron easily and group 17 elements can gain electron easily.
39. (c) Gold and silver are highly malleable and ductile.
40. (a) Mg is most reactive among these metals.