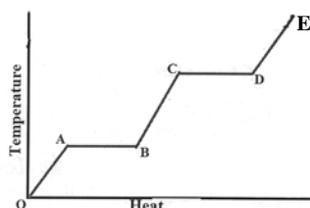


## 1 . Heat

### $\frac{1}{2}$ Mark Questions :

- How much energy is required to rise the temperature of unit mass of substance (material) by  $1^{\circ}\text{C}$  ?
  - Energy equal to its specific heat.
- Why does water on the floor disappear after sometime ?
  - Due to evaporation
- Write the S.I. unit for specific heat.
  - $\frac{\text{Joule}}{\text{Kilogram} - \text{kelvin}}$
- How much energy is required to turn 1g of ice of  $0^{\circ}\text{C}$  into 1 g of water at  $0^{\circ}\text{C}$  ?
  - 80 cal
- Which material will gain more heat ?
  - The material with more specific heat value.
- Convert  $30^{\circ}\text{C}$  to kelvin scale.
  - $30 + 273 = 303 \text{ K}$
- Convert  $70^{\circ}\text{C}$  to kelvin scale.
  - $70 + 273 = 343 \text{ K}$
- What is the principle of method of mixtures ?
  - Net heat lost = Net heat gained.
- Melting point of ice in kelvin scale ?
  - 273 K
- Boiling point of water in kelvin scale ?
  - $100^{\circ}\text{C} + 273 = 373 \text{ K}$
- What happens the kinetic energy of molecule in substance if temperature is increases ?
  - Kinetic energy increases
- If a solid is heated the temperature versus heat supplied graph is shown below.



Choose the correct.

- OA – Specific heat of solid.
  - AB – Latent heat of fusion
  - BC – Specific heat of a liquid
  - CD – Latent heat of vapourisation.
- A) i                      B) ii, iii, iv                      C) ii, iv                      D) i, iv
- A. C

13.  $m_1$  and  $m_2$  are two masses at the temperature  $T_1$  and  $T_2$  respectively. If they are mixing, what is the resultant temperature ?

A. 
$$\frac{m_1 T_1 + m_2 T_2}{m_1 + m_2}$$

14. Statement A : Heat is added to a substance during melting and boiling.

Statement B : Heat is removed from a substance during freezing and liquification.

Choose the correct.

A) Both A and B are true

B) A is true but B is false

C) A is false, B is true

D) Both A and B are false

A. A

15. On what factor rise in temperature are specific heat of substance depends ?

A. Nature of substance.

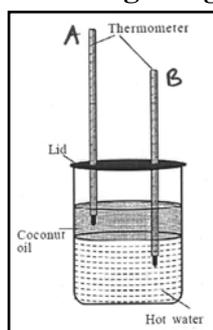
16. What is freezing point of water at one atmospheric pressure ?

A.  $0^\circ\text{C}$  or 273 K

17. What behaves like heat store house for the earth ?

A. The oceans

18. From the diagram given below the conclusions from the activity are



i) Water gains energy while oil loses energy

ii) After sometime reading of 'A' is more and B is less.

iii) Initially thermometer reading of 'A' is less and 'B' is more.

iv) K.E of the molecules of water decreases while the K.E of the molecules of increases.

A) (i) and (iv)

B) (ii) and (iii)

C) ii, iii, iv

D) All

A. C

19. Write the factors affecting the boiling.

A. Pressure and temperature

20. What is reason for climate near the seashore moderate ?

A. Sea breezes

### 1 Mark Questions :

1. What are the conditions for transfer of heat energy ?

A. 1. Two bodies should have difference in temperature.

2. There is thermal contact with each other.

**2. How can you differentiate temperature from heat ?**

- A. Heat is a thermal energy that flows from hot body to cold body. Temperature is measure of hotness or coldness of body.

(Or)

Temperature decides direction of heat flow, whereas heat is energy itself that flows.

**3. Why do we prefer water as a coolant ?**

- A. Due to high specific heat value of water, it can take more time to heat itself and act as a coolant.

**4. Write the factors that effect the process of evaporation.**

- A. Surface area, wind speed, humidity and temperature

**5. What is meant by thermal equilibrium ?**

- A. Two bodies are at the same temperature then they are said to be in thermal equilibrium.

**6. Why does ice float on water ?**

- A. The density of ice is less than that of water. Water contracts on freezing. So ice floats on water.

**7. Why do we feel sultry during summer ?**

- A. During hot days in summer the humidity is more, so, evaporation of sweat decreases. Therefore we feel sultry.

**8. The specific heat of copper is 0.075 and kerocene is 0.50. Then which will be heated up fast ?**

- A. Copper will be heated up fast.

**9. What happens to the surroundings if condensation takes place ?**

- A. The surroundings get hated up if condensation takes place.

**10. What are the material required in order to find specific heat of soild ?**

- A. Calorimeter, thermometer, stirrer, water, steam heater, wooden box and lead shots.

**11. Express the C.G.S unit of specific heat  $\frac{\text{Cal}}{\text{g} \cdot ^\circ\text{C}}$  into S.I unit ?**

- A.  $4.186 \times 10^3 \frac{\text{J}}{\text{Kg.K}}$

**12. What happens during change of state ?**

- A. 1. Temperature and avarage K.E of substance remain same.  
2. Total internal energy and potential energy of substance changes.

**13. 10g of ice at 0°C is mixing with 10 g of water at 60°C. What is the resultant temperature ?**

- A. 0°C

Sol :-  $Q_1 = mL = 10 \times 80 = 800 \text{ Cal}$

$Q_2 = mST = 10 \times 60 = 600 \text{ Cal}$

14. What amount of ice can be melted by 4800 cal of heat ?

A.  $Q = mL$

$$4800 = m \times 80$$

$$m = \frac{4800}{80} = 60\text{gms}$$

## 2. Acids, Bases And Salts

### $\frac{1}{2}$ Mark Questions :

1. Non-metallic oxides dissolve in water to form ..... ?  
A. Acids
2. Which gas is evolved, when zinc reacts with dilute HCl ?  
A. Hydrogen
3. Which ion is formed, when water molecule accepts a proton ?  
A.  $\text{H}_3\text{O}^+$
4.  $\text{CH}_3\text{COOH}$  is a weak acid due to.....  
A. The ionisation is very low in aqueous solution.
5. Which of the following  $\text{P}^{\text{H}}$  value is zero ?  
(Strong acid/ strong base / weak acid/ weak base)  
A. Strong acid
6. I am the scientist, introduced the concept of  $\text{P}^{\text{H}}$ . WHO am I ?  
A. Sorensen
7. Which tablets are used to neutralise acidity in the stomach ?  
A. Antacid
8. Acidity of the soil is reduced by adding.....  
A. Lime
9. Which is the basic nature (lemon juice/ gastric juice/ aerated water/ blood)  
A. Blood
10. A solution reacts with crushed egg shells to give a gas that turn lime water milky, the solution contains \_\_\_\_\_  
A. Hydrochloric acid (HCl)
11. What is the chemical name of the bleaching powder is \_\_\_\_\_ ?  
A. Calcium hypochlorite ( $\text{CaOCl}_2$ )
12. Write the common name of sodium hydroxide ?  
A. Caustic soda.

13. The components of baking powder are \_\_\_\_  
 A.  $\text{NaHCO}_3$  and tartraic acid  $[\text{COOH}(\text{CHOH})_2\text{COOH}]$
14. How many number of water molecules present in the gypsum ?  
 A. 2
15. Which substances used to the preparation of statues and black board chalk is \_\_\_\_  
 A. Plaster of paris
16. Which colour is formed, when phenophthalein indicator is added to NaOH solution ?  
 A. Pink

**1 Mark Questions :**

1. What are the olfactory indicators ?  
 A. Olfactory indicators are substances which have different odour in acid and base solution.
2. Given reason, while diluting an acid, why is it recommended that the acid should be added to water and not water to the acid ?  
 A. So much heat is produced during the dilution process.
3. What is the main reason of acidic nature in acidic solution ?  
 A.  $\text{H}^+$  ions, the strength of acidic nature depends upon number of  $\text{H}^+$  ions
4. Why does solutions behave as electrolytes ?  
 A. In solution contains  $\text{H}^+$  ions/  $\text{H}_3\text{O}^+$  ions /  $\text{OH}^-$  ions.
5. Some non-metals burn in air and forms their oxides. Give two examples.  
 A.  $\text{C} + \text{O}_2 \longrightarrow \text{CO}_2$   
 $\text{S} + \text{O}_2 \longrightarrow \text{SO}_2$
6. What is nuetralization reaction ?  
 A. Acid reacts with base to form salt and water is known as nuetralisation reaction.
7. Which acid contains in ants ?  
 A. Formic acid
8. Why pickles are not stored in metallic vessels ?  
 A. They react metals and form poisonous substances
9. Which gas is liberated when carbonates react with acids ?  
 A. Carbondioxide ( $\text{CO}_2$ )
10. Write any two uses of bleaching powder.  
 A. i) Used for disinfecting water.  
 ii) Preparation of chloroform.
11. What chemical substance is used in making cake or bread soft and spongy ?  
 A. Sodium hydrogen carbonate ( $\text{NaHCO}_3$ )
12. Why pure acetic acid does not turn blue litmus to red ?  
 A. Pure acetic acid not containing the  $\text{H}^+$  ions.

### 3. Refraction of Light at Plane Surface

#### Objective questions :

**1. What is refraction ?**

A. The bending of light ray when light travels from one medium to another medium is called refraction.

**2. On which factors refractive index depends ?**

A. Refractive index depends on 1. Nature of material  
2. Wavelength of light used

**3. How  $n_{12}$  and  $n_{21}$  are differ each other ?**

A.  $n_{12} = \frac{n_1}{n_2} = \frac{V_2}{V_1}$                        $n_{21} = \frac{n_2}{n_1} = \frac{V_1}{V_2}$

**4. What is the relation between refractive index and vertical shift of a glass slab ?**

A. Refractive index =  $\frac{\text{Thickness of the glass slab}}{\text{Thickness of glass slab} - \text{Vertical shift}}$

**5. At \_\_\_\_\_ angle of incidence, the angle of refraction is  $90^\circ$ .**

A. Critical

**6. During refraction \_\_\_\_\_ will not change.**

A. Frequency

**7. The net deviation produced by a rectangular glass slab is**

A) Equal to angle of incidence

B) Greater than angle of incidence

C) Zero, always

A. A

**8. A : If light travel from water to air, ray of light bends away from the normal.**

**R : Light travels slowly in denser medium.**

(i) A is correct, R is wrong

(ii) A is wrong, R is correct

(iii) Both A, R are correct

A. Both A, R are correct

**9. I am an axiom and I strictly followed by refraction of light. Who am I ?**

A. Fermat principle

**10. Diamond : Total internal reflection : : Twinkling of stars : \_\_\_\_\_**

A. Refraction

**11. Match the following**

- |                        |     |                            |
|------------------------|-----|----------------------------|
| i) $\frac{V_1}{V_2}$   | ( ) | a) $\frac{\sin i}{\sin r}$ |
| ii) $\sin c$           | ( ) | b) $n_{12}$                |
| iii) $\frac{V_2}{V_1}$ | ( ) | c) $\frac{1}{n}$           |

A) i - c, ii - b, iii - a

B) i - a, ii - c, iii - b

C) i - b, ii - a, iii - c

A. i - a, ii - c, iii - b

**12. Ravi wrote snell's law as  $\frac{n_1}{n_2} = \frac{\sin i}{\sin r}$  and Rani wrote it as  $\frac{n_1}{n_2} = \frac{\sin r}{\sin i}$ . Who is correct ?**

A. Rani is correct

**13. What is the principle involved in working of the following device.**



A. Total internal reflection.

**14. When light ray travel from denser medium to rarer medium, the relation between 'r' and 'i' is**

A)  $r = i$

B)  $r > i$

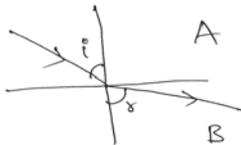
C)  $r < i$

A. B)  $r > i$

**15. If the critical angle is  $45^\circ$ , what is the refractive index ?**

A.  $\sqrt{2} = 1.414$ .

**16.**



**Observe the figure and write the nature of A, B media.**

A. A - Denser

B - Rarer

**17. Light enter from air to diamond which has R.I of 2.42. Calculate the speed of light in diamond, if speed of light in air is  $3 \times 10^8$  m/s.**

A.  $n = \frac{C}{V}$

$$\therefore V = \frac{3 \times 10^8}{2.42} = 1.24 \times 10^8 \text{ m/s}$$

### Very Short Answer Questions

- 1. What is Fermat's principle ?**

A. The light ray always travels in a path which needs shortest possible time to cover the distance between the two given points.
- 2. What is mirage ?**

A. An optical illusion caused by atmospheric conditions, especially the appearance of a sheet of water in a desert or on a hot road caused by refraction of light from the sky by heated air.
- 3. What are the conditions for total internal reflection ?**

A. 1. The ray of light must travel from denser to rarer medium.  
2. The angle of incidence of denser medium must be greater than critical angle.
- 4. Why a coin placed in water appear to be raised ?**

A. It is due to refraction of light.
- 5. A ray of light falls normally on a face of a glass slab. What are the values of angle of incidence and angle of refraction of this ray ?**

A. Both angles are zero, means it comes out without any deviation.
- 6. What is relationship between angle of incidence and shift ?**

A. As the angle of incidence increases, the shift also increases.
- 7. You are given kerosene, ice and water. In which of these does the light travel faster ?**

A. The light travels faster as its refractive index is minimum. Hence light travels faster in ice.
- 8. Why does a diamond shine more than a glass piece cut to the same shape ?**

A. The critical angle of a diamond is very low compared to glass piece. Hence light ray enters a diamond is very likely to undergo total internal reflection, which makes the diamond shine.
- 9. Name the colour of light for which critical angle is minimum and maximum ?**

A. Violet → minimum  
Red → maximum
- 10. Why dispersion of light cannot be observed in a glass slab ?**

A. After refraction at two parallel faces of a glass slab, a ray of light emerges in a direction parallel to the direction of incidence of white light. As rays of all colours emerge in the same direction, there is no dispersion.
- 11. Write any two questions which you ask your teacher, to know about formation of mirages ?**

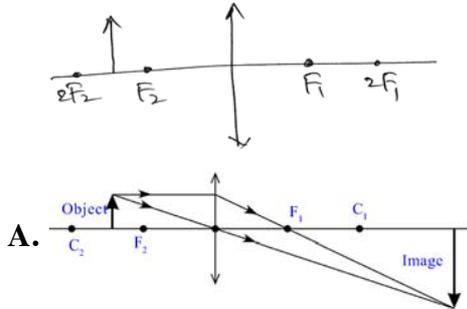
A. i) How do the mirages form ?  
ii) At what situations do mirages form ?
- 12. What is the image of the boy standing at shore to the person swimming in water ?**

A. The boy appears to be taller.

## 4. Refraction of Light at Curved Surfaces

### Objective questions :

1. The complete ray diagram for



2. The focal length of lens \_\_\_\_\_ in water.

A. Increases

3. Lens formula :  $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$  :: lens makers formula \_\_\_\_\_

A.  $\frac{1}{f} = (n-1) \left[ \frac{1}{R_1} - \frac{1}{R_2} \right]$

4. Which of the following is true ?

A) Convex lens always forms virtual image

B) Convex lens always forms real image

C) Concave lens always forms virtual image

D) Concave lens always forms real image

A. Concave lens always forms virtual image

5. For a convex lens :

**Position of object**

**Position of image**

i) At Focus ( )

P) Same side

ii) Between 2F and F ( )

Q) Infinity

iii) Between F and O ( )

R) Beyond 2F

A) i - Q, ii - R, iii - P

B) i - P, ii - Q, iii - R

C) i - R, ii - P, iii - Q

D) i - Q, ii - P, iii - R

A. i - Q, ii - R, iii - P

6. How will the image formed by a convex lens be affected if the upper half of the lens wrapped with a black paper ?

- A) The size of the image is reduced to one - half
- B) The upper half of the image will be absent
- C) The brightness of the image is reduced.



A. The brightness of the image is reduced.

7. A : For a erect object having inverted image, linear magnification is negative.

R : Linear magnification is the ratio between height of object and height of image.

- A) Both A and R are correct
- B) Both A and R are wrong
- C) A is correct R is wrong
- D) A is wrong R is correct

A. Both A and R are wrong

8 What is focus of a lens ?

A. The point of convergence of the point of divergence of a lens is its focus.

9. What is focal plane ?

A. A plane which is perpendicular to principle axis at the focus is called focal plane.

10. Give two uses of convex lens.

- A. 1. Used in projectors.
- 2. Used in cameras

11. What type of lens behaviour will an air bubble inside water show ?

A. Convex lens

12. What happens if the ray passes through principle axis ?

A. It will be undeviated.

13. When do you get a virtual image with convex lens ?

A. The object is placed between focus and pole.

14. Is it possible for a lens to act as a convergent lens in air medium and a divergent lens in another ?

A. Yes, a convergent lens is placed in a higher refractive index of medium, the nature of the lens changes.

#### Very Short Answer Questions

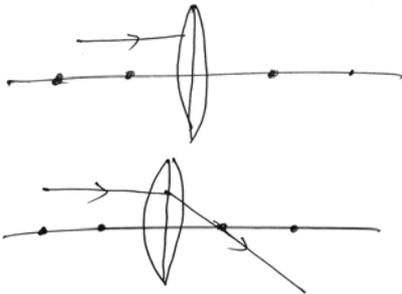
1. Is focal length of a lens is zero ? If not why ?

A. No, focal length of lens never equals to zero, because it is the distance between focal point and optical centre.

2. Ravi used a lens to burn a paper. What is that lens ? What is the other name of it ?

A. It is convex lens. It is also known as converging lens.

3. Draw the given diagram in your answer book and complete it for the path of ray of light beyond lens.



A.

4. How will you decide whether a given piece of glass is a convex lens. Concave lens or a plane plate ?

A. Hold the given piece of glass over some printed matter.

1. Magnified letters  $\rightarrow$  convex lens
2. Diminished letters  $\rightarrow$  concave lens
3. Appear to be same  $\rightarrow$  plane glass

5. Find the focal length of a plane convex lens if its radius of curvature is R and its refractive index is n.

A. 
$$\frac{1}{f} = (n-1) \left[ \frac{1}{R_1} - \frac{1}{R_2} \right]$$

$$R_1 = \infty, R_2 = R$$

$$\therefore \frac{1}{f} = (n-1) \frac{1}{R}$$

$$\therefore f = \frac{R}{(n-1)}$$

6. When you saw a person swimming in the water, do you find any changes in his size or height why ?

A. When we saw from out side, he looks shorter than his original size.

7. Can a virtual image be photographed ?

A. Yes, a virtual image can be photographed by a camera.

8. What are the symbols used to denoted bi-convex and bi-concave lens in a ray diagram ?

A. Bi-convex lens -



bi-concave lens -



9. Write formula for image formation by curved surfaces.

A. 
$$\frac{n_2}{v} - \frac{n_1}{u} = \frac{n_2 - n_1}{R}$$

10. In which position of object before on convex lens we get image at infinity ? Why ?

A. If the object lies at 'F', we get image at infinity, because after refraction the rays travel parallel.

## 5 . Human Eye And Colourful World

$\frac{1}{2}$  Mark Objective questions :

1. Match the following [ A ]

- |                  |                  |
|------------------|------------------|
| 1. Myopia        | a) Convex lens   |
| 2. Hypermetropia | b) Bi-focal lens |
| 3. Presbyopia    | c) Concave lens  |

A) 1 - c, 2 - a, 3 - b                      B) 1 - b, 2 - a, 3 - c

C) 1 - c 2 - b, 3 - a                      D) 1 - b, 2 - c, 3 - a

2. Identify the wrong combination [ D ]

- |                                       |                                      |
|---------------------------------------|--------------------------------------|
| A) Variable aperture - Pupil          | B) Light sensitive membrane - Retina |
| C) Thin transparent membrane - Cornea | D) Ciliary muscles - Optic nerve     |

3. A : blue colour of sky appears due to scattering of light

R : Blue colour has shortest wave length among all colour [ C ]

- A) Both A and R are true and R supports A  
B) Both A and R are true and R not support A  
C) A is true but R is not true  
D) A is false but R is true

4. Least distance of distinct vision : 25 cm :: Angle of vision : \_\_\_\_\_ [ C ]

A) 30°                      B) 40°                      C) 60°                      D) 90°

5. Choose the incorrect statement [ A ]

- A) Light is a mechanical wave  
B) Presbyopia can be corrected by bi-focal lens  
C) The reciprocal of focal length is called power of lens  
D) Sun light is mixture of seven colours

6. Red, violet, green, blue arrange these from smaller to higher wave length

A. Violet, blue, green, red.

7. Match the following [ B ]

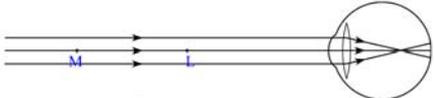
- |               |     |                           |
|---------------|-----|---------------------------|
| 1. Refraction | ( ) | P) Rainbow                |
| 2. Scattering | ( ) | Q) Blue colour of the sky |
| 3. Dispersion | ( ) | R) Twinkling of stars     |

- |                        |                        |
|------------------------|------------------------|
| A) 1 - Q, 2 - R, 3 - P | B) 1 - R, 2 - Q, 3 - P |
| C) 1 - P, 2 - R, 3 - Q | D) 1 - P, 2 - R, 3 - Q |

8. The pupil in the eye is [ C ]

- a) A small hole in retina
- b) A small hole in a muscular diaphragm called Iris
- c) It appears white because any light falling on it goes into the eye
- d) Appears black because any light falling on it goes into the eye

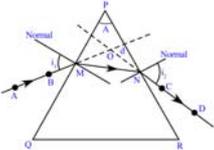
- A) a, b, c      B) a, b, d      C) b, d      D) a, b, c, d

9.  This defect can be corrected by using \_\_\_\_\_ lens

A. Concave lens

10. During refraction of light the characters of light which does not change is \_\_\_\_\_ [ B ]

- A) Wave length    B) Frequency    C) Speed    D) Colour

11.  From this figure mention name of  $\angle d$  ?

A. Angle of deviation

12. Write the relation between  $V$ ,  $\lambda$ ,  $f$ .

A.  $V = f \lambda$

### 1 Mark Questions

**1. Does eye lens form a real image or virtual image ?**

A. Eye lens forms a real and inverted image

**2. What are the maximum and minimum focal lengths of eye lens ?**

A. Maximum focal length is 2.5 cm.

Minimum focal length is 2.27 cm.

**3. What do you mean by power of lens ?**

A. The reciprocal of focal length is called power of lens.

**4. Is the speed of light of each colour different ?**

A. In Vacuum : Speed of each colour is constant.

In medium : Speed of each colour is different.

5. **Mention the role of pupil in a human eye ?**

A. To regulate the amount of light entering the eye.

6. **A short sighted person may read a book without spectacles. Comment.**

A. The statement is true, because a short-sighted person has difficulty in observing far off objects.

7. **Which colour of light bends the most and the least ?**

A. Red colour bends the least and violet bends more.

8. **How does retina respond to light ?**

A. Retina consists of two types of photo sensors. They are

Cones – provide colour vision

Rods – respond to intensity of light

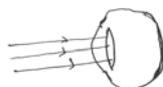
9. **What is the direction of rainbow formation ? What is the position of red colour in rainbow ?**

A. Rainbow is always formed in the direction opposite to the sun. The position of red colour in the rainbow is at the top.

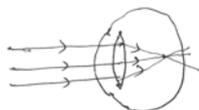
10. **Why is red colour selected for danger signal ?**

A. Red colour light has maximum wavelength, least scattering and travels fast due to its higher wavelength.

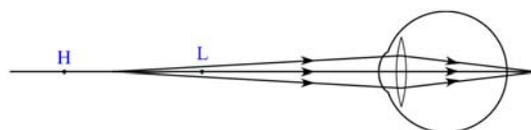
11. **Complete ray diagram assuming the given eye is myopic eye ?**



A.



12. **Study the diagram given below. Which defect of vision is represented in this case ? Give reason.**



A. This defect is hypermetropia. The reason is the image of near point is formed beyond retina.

## 6. Structure of Atom

$\frac{1}{2}$  Mark Questions :

1. **IR rays, cathod rays, X-rays and  $\gamma$ -rays among them which is not electromagnetic radiation ?**

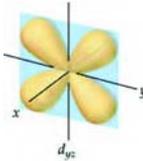
A. Cathod rays

2. **Who is given the relation between energy of the radiation and its frequency ?**

A. Plank

3. **Which quantum number represents size and energy ?**

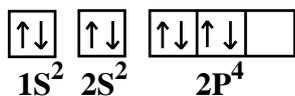
A. Principle quantum number.

4. The total number of stationary states present in "M".
- A. 9
5. The maximum number of electrons in the fourth orbit are
- A. 32
6. The number of sub-shells in  $n = 3$  orbit are
- A. 3
7. Double dumbbell shape orbital is .....
- A. d
8. Write the four quantum number values of  $3d^4$  orbital.
- A.  $n = 3, l = 2, m_l = -2, -1, 0, 1, 2, m_s = +\frac{1}{2}$
9. Write an electronic configuration of carbon atom is
- A.  $1s^2 2s^1 2p_x^1 2p_y^1 2p_z^1$
10. "No two electrons of an atom can have the same values for all the four quantum numbers". Who proposed it ?
- A. Pauli
11. The element which shows an outer configuration of  $3s^2 3p^6$
- A. Ar
12. After completion of 3d orbital, the electron enters in which orbital ?
- A. 4p
13. Energy/velocity/frequency/wavelength, form these all types of electromagnentic radiation posses the same.
- A. Velocity
14. Which element having the electronic configuration of  $1s^2, 2s^2, 2p^6, 3s^2, 2p^5$  ?
- A. Chlorine
15.  To which boundary surface diagram of d orbital it indicates ?
- A.  $d_{xy}$

**1 Mark Questions :**

1.  $E = h \nu$ , which is the plank constant in this equation ? What is its value ?
- A.  $h$  is the plank constant,  $h = 6.626 \times 10^{-34}$  J/sec
2. What is electromagnetic spectrum ?
- A. The entire range of electromagnetic wave frequency is known as the electromagnetic spectrum.

3. The following orbital diagram shows the electronic configuration at oxygen atom ?( ${}_8\text{O}$ )



Which rule doesnot support this ?

A. Hund's rule

4. Fill the table with suitable this.

$l$	Sub shell	No.of degenerated orbital
0	s	
	p	3
2	d	
	f	

A.

$l$	Sub shell	No.of degenerated orbital
0	s	1
1	p	3
2	d	5
3	f	7

5. Draw the  $dz^2$  orbital.

A.



6. If  $l = 2$ , then what is the minimum and maximum values for  $m_l$  ?

A.  $m_l = (2l + 1) = (2 \times 2 + 1) = 5$

$-2, -1, 0, 1, 2$

Maximum value = 2, Minimum value = -2

7. The electronic configuration of  $\text{Ca}^+$  ion.

A.  $1\text{S}^2, 2\text{S}^2, 2\text{P}^6, 3\text{S}^2, 3\text{P}^6$

8. Who proposed magnetic quantum number ?

A. Lande

9. The  $(n + l)$  value for 3f electron is \_\_\_\_\_

A.  $(n + l) = 3 + 3 = 6$

10. In  $n l^x$  method 'n' letter indicates \_\_\_\_\_

A. Principle quantum number.



12. **X : In a periodic table the valence electrons are equal to its group number.**

**Y : Modern periodic table is based on atomic weight.**

- A) Both X and Y are true                      B) X is true and Y is wrong  
C) Both X and Y are wrong                  D) X is wrong and Y is true

A. B) X is true and Y is wrong

13. **Match the following**

A) Eka Boron            [       ]        x) Scandium

B) Eka Aluminium [       ]        y) Gallium

C) Eka Silicon        [       ]        z) Germanium

- A) A - x, B - y, C - z                      B) A - y, B - x, C - z                      C) A - z, B - x, C - y

A. C) A - x, B - y, C - z

**1 Mark Questions :**

1. **Which one between Na and Na<sup>+</sup> ions would have more size ? Why ?**

A. Na has more size than Na<sup>+</sup> ion. Because Na has 11 electrons and Na<sup>+</sup> ion has only 10 electrons and increase the nuclear attraction.

2. **Name the elements which have most and least electronegativity ?**

A. The most electronegativity element is 'F'  
The least electronegativity element is 'Cs'

3. **Which group elements are called carbon family ?**

A. The carbon family is element group 14 (or) IV A of the periodic table.

4. **What is meant by a Dobereiner's law of triads ?**

A. A group of three elements in which atomic weight of middle element is the average of first and third elements.

Ex :- Li, Na, K; Cl, Br, I

5. **What is octant rule ?**

A. The atoms of the elements contain eight electrons in the valency shells called octant.

6. **How does the metallic character change when move**

i) **Down a group**

ii) **Across period**

A. Group :- In a group from top to bottom the metallic character increases

Period :- In a period from left to right the metallic character decreases.

7. **How many elements in the 6<sup>th</sup> period ?**

A. 32 elements

**8. What are lanthanoids ?**

A. The 14 elements in f-block  $_{58}\text{Ce}$  to  $_{71}\text{Lu}$  are called lanthanoids. These are in 6<sup>th</sup> period. These are shown at the bottom of the periodic table.

**9. What is modern periodic law ?**

A. The physical and chemical properties of elements are periodic functions of their electronic configuration.

**10. What are metalloids ?**

A. The properties of elements which are intermediate between the properties of metals and non-metals are called metalloids.

**11. What is electropositive character ?**

A. The tendency of metals to remain positive ions in compounds is called electropositive character.

**12. How does the valency vary on going down a group ?**

A. The valency is constant when we move from top to bottom in a group because the number of valence electrons are same for same group elements.

**13. What is screening effect (or) shielding effect ?**

A. More the shells which electrons between the nucleus and the valence shell, they act as screens to decrease nuclear attraction over valence electron. This is called screening effect (or) shielding effect.

## 8. Chemical Bond

$\frac{1}{2}$  Mark Questions with Answers :

1. **X : Elements with more electropositive character from cations**

**Y : Elements with more electronegative character from anions**

A) Both X and Y are true

B) X is true and Y is wrong

C) Both X and Y are wrong

D) None of the above

A. A

2. **Which one of the following element belongs to the 3rd period and IIIA group ?**

A) Sodium

B) Potassium

C) Aluminium

D) Argon

A. B

3. **In sodium chloride crystal, the coordination number of Na and Cl are \_\_\_\_\_**

A. Na - 6, Cl - 6

4. **What is the hybridization Boron trifluoride ?**

A.  $sp^2$  hybridization



### 1 Mark Questions :

1. Write the names of any two compounds which have an ionic bond ?

A. NaCl, MgCl<sub>2</sub>, AlCl<sub>3</sub>, etc.,

2. Expand VSEPR.

A. VSEPR - Valence Shell Electron Pair Repulsion Theory.

3. What is chemical bond ?

A. The force between any two atoms or a group of atoms that results in the formation of a stable entity is called "Chemical bond".

4. Write the electronic configuration of Na<sup>+</sup> and Cl<sup>-</sup>

A. Na<sup>+</sup> = 1S<sup>2</sup> 2S<sup>2</sup> 2P<sup>6</sup>

Cl<sup>-</sup> = 1S<sup>2</sup> 2S<sup>2</sup> 2P<sup>6</sup> 3S<sup>2</sup> 3P<sup>6</sup>

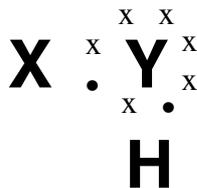
5. Which compounds exhibit low melting and boiling points ?

A. Covalent compounds exhibit low melting and boiling points when compared to ionic compounds.

6. Which type of compounds are more soluble in polar solvents ?

A. Ionic compounds are more soluble in polar solvents.

7. How many valence electrons does element Y have ?



A. Element Y has 6 valence electrons.

8. What is the valency of element X ?

A. The valency of element X is one.

9. Write any two names of molecules having double bond ?

A. O<sub>2</sub>, C<sub>2</sub>H<sub>4</sub>, CO<sub>2</sub> etc.,

10. Sreenath says that "The number of electrons gained by a non-metal is its valency". Do you agree with the statement of Sreenath ? Explain.

A. Yes, I agree with the statements of Sreenath.

Reason :-

1. The number of electrons gained by a non-metal element for its atom is its valency.

2. For example the number of electrons gained by chlorine is 1. So, one is the valency of chlorine.

11. What is bond length ?

A. Bond length is defined as the distance between the 2 nuclei of the atoms which are involved in bonding.

12. Write the formula of compound when an element X of group 2 reacts with an element of Y of group 17 ?

A. XY<sub>2</sub>

## 9 . Electric Current

### $\frac{1}{2}$ Mark Questions :

1. What connection is used in domestic appliance in our home ?  
A. Parallel
2. What is the value of 1KWH ?  
A.  $3.6 \times 10^6$  Joules
3. Who proposed the "Junction Law" ?  
A. Kirchhoff
4. What is S. I unit of resistance ?  
A. Ohm
5. What is the electric potential of earth ?  
A. Zero
6.  $R = \rho \frac{l}{A}$  , In this formula. What indicates "A" ?  
A. Area of cross section.
7. Which gas is used to fill the electric bulb ?  
A. Argon
8. What is the reason for the tungsten filament bulb is filled with inert gas because ?  
A. To stop reduction
9. What is the main use of fuse ?  
A. To prevent fire accidents, to prevent overloading of household circuits.
10. Write S.I unit of current.  
A. Ampere
11. Three resistors of values  $2 \Omega$ ,  $4 \Omega$ ,  $6 \Omega$  are connected in parallel. What is the equivalent resistance of combination of resistors ?  
A.  $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} = \frac{1}{2} + \frac{1}{4} + \frac{1}{6} = \frac{6+3+2}{12} = \frac{11}{12}$   
 $R = \frac{12}{11} = 1.09 \Omega$
12. Name the two semi conductor.  
A. Silicon and Germanium.

### 1 Mark Questions :

1. What factors are effected on resistance ?  
A. Nature of substance, length area of cross section and temperature.

2. Why does a bird not get the shock, when it stands on a high voltage wire ?

A. There is no potential difference between the legs of the bird.

3. Define Ohm ?

A. If 1 ampere of electric current passes between two points of potential difference 1 volt, then the resistance between them said to be 1 ohm.

4. What are the metals contain in nichrome wire ?

A. Nickel, Chromium and Iron

5. Silver is a better conductor of electricity than copper. Why do we use copper wire for conduction for electricity ?

A. Silver is a costly metal than copper.

6. Write the two examples of non Ohmic conductors ?

A. LED and Semi-conductor.

7. How is the voltmeter connected in a circuit ?

A. Voltmeter connected parallel in the circuit

8. Calculate the resistance of the circuit, when 12V battery is connected and 2A current passing through it ?

A.  $R = \frac{V}{i} = \frac{12}{2} = 6 \Omega$

9. Find the effective resistance of the circuit R, when  $R_1$ ,  $R_2$  and  $R_3$  resistance connected in series in the circuit ?

A.  $R = R_1 + R_2 + R_3$

10. Why do we consider tungsten as suitable material for making the filament of a bulb ?

A. It has high resistance and high melting point ( $3422^\circ\text{C}$ )

11. Find the value of XA ?



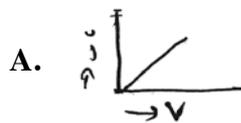
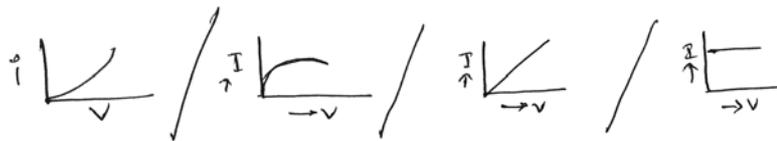
A.  $XA + 6A + 4A + 3A = 5A + 2A + 1A + 9A$

$$XA + 13A = 17A$$

$$XA = 17A - 13A$$

$$= 4A$$

12. From the following V-I graphs. Find the Ohmic conductor graph. Write reason.



It passes through origin and straight line.  
Ohmic conductor graph.

## 10 . Electromagnetism

### $\frac{1}{2}$ Mark Questions :

1. What is the S.I unit of magnetic field ?  
A. Tesla
2. What we call a long, tightly wound helical coil of insulated copper wire ?  
A. Solenoid
3. What is the instrument which can detect the presence of electric current in a circuit ?  
A. Galvonometer
4. Which device produces the electric current ?  
A. Generator
5. Who has stated the right hand thumb rule for detecting the direction of field lines ?  
A. Maxwell
6. In all the electrical appliances, the switches are put in the \_\_\_\_\_ wire.  
A. Phase wire or live wire
7. Magnetic field inside the Solenoid is \_\_\_\_\_  
A. Uniform magnetic field.
8. According to the Right hand thumb rule, direction of thumb indicates ?  
A. Motion of the conductor
9. Which instrument is used for converting electrical energy into mechanical energy ?  
A. Electric motor
10. The magnetism of magnets is maximum at \_\_\_\_\_  
A. At poles
11. What the direction of magnetic field inside a Solenoid ?  
A. From south pole to north pole
12. What is the main difference in A.C generator and D.C generator ?  
A. Split rings

**13. What principle used in working of electric generator ?**

A. Electromagnetic induction

**14. Electromagnetic induction was discovered by \_\_\_\_\_**

A. Michael Faraday

**15. What indicates the middle finger in flemings left hand rule ?**

A. Flowing current

**1 Mark Questions :**

**1. Who was the scientist first established the connection between electricity and magnetism ?**

A. Hans christian Oersted is the scientist.

**2. Magnetic lines of forces are endless. Comment.**

A. They are always continuous closed loops. So, they are endless

**3. Why do we use steel or alnico for making parmanent magnets ?**

A. Magnetism in steel or alnico stays for a longer time.

**4. What is the function of a split ring in an electric motor ?**

A. In D.C motor which operates one direct current obtained from a battery.

**5. Name some sources of direct current.**

A. Dry cells, button cells

**6. Why is it not advisable to handle domestic electrical circuit with wet handles ?**

A. Wet hands are good conductors of electricity. It will gives us an electric shock while handling it.

**7. What is the potential difference between live and neutral wires in India ?**

A. 220 Volts the potential difference live nad netural wires in India.

**8. What is meant by a magnetic flux ? Write their units.**

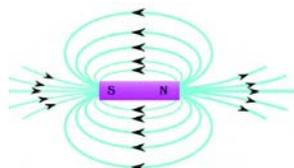
A. the number of magnetic lines passing through the plane. It is denoted by ' $\phi$ '. Its units are "weber".

**9. Write the uses of a Solenoid.**

A. It is used in electric bell, fan and generators

**10. Draw the diagram showing the magnetic field lines of a bar magnet ?**

A.



**11. State the Faraday's law.**

- A. The induced EMF generated in a closed loop is equal to the rate of change of magnetic flux passing through it.

**12. State the Lenz's law.**

- A. The induced current setup in the coil is in such a direction that it opposes the changes in the flux.

## 11. Principle of Metallurgy

**$\frac{1}{2}$  Mark Questions :**

**1. What is impurity present in the ore ?**

- A. Gangue

**2. Write the ore of carbonate.**

- A. Magnesite

**3. What is the name of the oil used in the froth flotation process ?**

- A. Pin oil

**4. Galena is an ore of \_\_\_\_\_ metal.**

- A. Pb

**5. Write the chemical formula of Gypsum.**

- A.  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$

**6. Which ore is purified in froth floatation method ?**

- A. Sulphide

**7. The metal that occurs in the native form is \_\_\_\_\_**

- A. Gold (Au) or Silver (Ag) or Platinum (Pt)

**8. What is the reducing agent in the thermite process ?**

- A. Aluminium (Al)

**9. Sulphide ores are converted into oxides by heating them strongly in excess of air. This process is known as ?**

- A. Roasting

**10. Write the chemical formula of cinnabar.**

- A. HgS

**11. Which method is suitable for purification of Blister copper ?**

- A. Poling method

**12. When iron is mixed with nickel and chromium we get an alloy which does not rust ?  
What is the name of this alloy ?**

A. Stainless steel

**13. Which furnace is used for roasting ?**

A. Reverberatory furnace

**14. Which furnace is used for smelting ?**

A. Blast furnace

**15. Which of the following is not a refining method of crude metal ?  
(Smelting / Poling / Distillation / Liquation)**

A. Smelting

**1 Mark Questions :**

**1. Write the names of any two ores of iron.**

A. Hematite ( $\text{Fe}_2\text{O}_3$ ), Magnetite ( $\text{Fe}_3\text{O}_4$ )

**2. Define the term slag.**

A. The impurities obtained during the poling process get oxidized to form slag (scum) over the surface of the molten metal.

**3. What is metallurgy ?**

A. The process of extraction of metals from their ores.

**4. List the metals that are found in nature in uncombined form.**

A. Gold (Au), Silver (Ag) and Platinum (Pt)

**5. What are the metals present in the Bronze alloy ?**

A. Copper and Tin (Cu, Sn)

**6. Write the chemical formula and name of rust.**

A.  $\text{Fe}_2\text{O}_3 \cdot \text{H}_2\text{O}$  (Hydrated ferric oxide)

**7. What is stainless steel ?**

A. Stainless steel is an alloy of iron, nickel and chromium

**8. What is meant by furnace ?**

A. Furnace is the one which is used to carry out pyrochemical processes in metallurgy.

**9. Iron gets rust but gold does not. Why ?**

A. Iron is a moderate reactive metal, gold is a less reactive metal. So, iron gets rust easily.

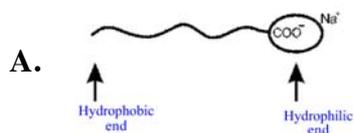
**10. What are minerals ?**

A. The elements or compounds of the metals that occur in nature in earth crust are called as minerals.

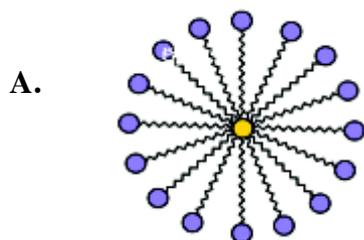
## 12 . Carbon And Its Compounds

### $\frac{1}{2}$ Mark questions :

1. Write the electronic configuration of carbon in excited state.  
A.  $1S^2 2S^1 2P_x^1 2P_y^1 2P_z^1$
2. Which orbitals are involved in the hybridisation of carbon ?  
A. 2S and 2P
3. What is the property to ability to atoms of an element to form long chains ?  
A. Catenation
4. Name the term, compounds having same molecular formula but different properties.  
A. Isomers
5. Name the catalyst used in hydrogenation of oils.  
A. Nickel
6. Which is used as preservative in pickles ?  
A. Vinegar
7. Name the reaction between carboxylic acid and alcohol to form sweet smelling liquid.  
A. Esterification
8. Write the formula of stearic acid.  
A.  $C_{17}H_{35}COOH$
9. The number of carbon atoms in Buckminster fullerene.  
A. 60
10. Who discovered nano tubes ?  
A. Sumio Iijima
11. First prepared organic compound urea  $[NH_2CONH_2]$  is prepared from  
A.  $NH_4CNO$  [Ammonium cyanate]
12. Who prepared first organic compound in the laboratory ?  
A. Wohler
13. Draw the soap molecule.

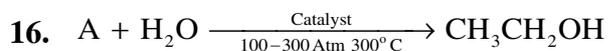


14. Draw the diagram of micelle.



15. Which of the compound is used to detect drunken drivers ?

A.  $K_2Cr_2O_7$  [Potassium dicromate]



Which carbon compound represent in A place ?

A.  $C_2H_4$

### 1 Mark Questions :

1. Diamond is a poor conductor of electricity while graphite is a good conductor. Assign reason.

A. In the structure of diamond, all the four valency electrons of carbon are involved in the formation of covalent bonds. There is no free electrons. In the structure of graphite three electrons in the valency shell of carbon are involved in covalent bond formation. The fourth electron is free to move. Therefore graphite is a good conductor.

2. Which of the following formula represents a saturated hydrocarbon ?



A.  $C_n H_{2n+2}$

3. Which functional groups always occurs at the terminal position of a carbon chain ?

A. Aldehyd group  $R - CHO$

Carboxylic group  $R - COOH$  [R = alkyl group]

4. State the valency of each carbon atom in an alkane and alkyne.

A. Valency of each carbon atom in an alkane and alkyne is four.

5. Write molecular formula of alcohol which can be derived from butane ?

A. Butanol [ $CH_3 - CH_2 - CH_2 - CH_2 - OH$ ]

6. What is the composition of natural gas used for cooking ?

A. Natural gas mainly contains methane [ $CH_4$ ] 90%, along with decreasing amounts of ethane, propane, butane etc.,

7. On burning a hydrocarbon in air, a student obtains sooty flame. What does it indicates ?

A. Incomplete combustion of unsaturated hydrocarbons.

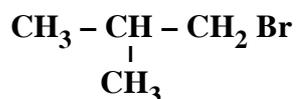
8. What would be the disadvantage of detergents over soaps ?

A. Some of the detergents are non-biodegradable hence causes water pollution in lakes and rivers.

9. State the part of soap molecule that attaches it self to dirt when soap is dissolved in water.

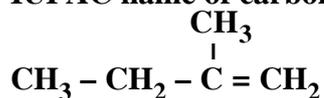
A. Hydrophobic end.

10. IUPAC name of carbon compound



A. 1 - Bromo, 2 - methyl propane

11. IUPAC name of carbon compound

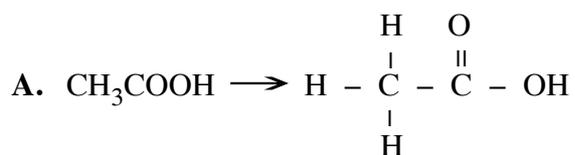


A. 2 - methyl 1 - butene

12. Write the functional groups of ketone and aldehyde

A. Ketone  $-\overset{\text{O}}{\parallel}{\text{C}}-$  Aldehyde  $-\text{CHO}$

13. Draw the structure of Ethanoic acid.



14. Write any two uses of ethanol.

A. It is used as an active ingredient in all alcoholic drinks it is useful in medicines like tincture of Iodine, cough syrups etc.,.

15. What are the characteristics of homologous series ?

A. Homologous series can be represented by the same general formula any two adjacent homologous differ by  $-\text{CH}_2$  in their molecular formula.