

# 10<sup>th</sup> STANDARD SCIENCE MINIMUM MATERIAL

## **Part-A**

### **Lesson-1 Heredity and Evolution**

Answer the following:

- 1.Mendel observed 7 pairs of contrasting characters in pisum sativum.One of the following is not a part of that find out-----.
- 2.Primitive man evolved in-----.
- 3.Theory of Natural selection was proposed by-----
- 4.Somatic gene therapy affects-----
- 5.What are the sources of somatic stem cells-----

### **Lesson-2 Immune System**

- 6.Pick out the Bacterial disease-----
- 7.One of the following is transmitted through air.Find out-----.
- 8.The most serious form of malaria is caused by plasmodium-----
- 9.An example for protozoan infecting our intestine is-----
- 10.One of the means of indirect transmission of a disease is-----
- 11.The first vaccine injected into a just born baby is-----
- 12.Pick out a non\_antigen.Entry of-----

### **Lesson-3 Structure and functions of Human Body**

- 13.An endocrine gland found in neck is-----
- 14.An endocrine gland which is both exocrine and endocrine is-----
- 15.Normal blood glucose level in 100ml of blood is-----
- 16.In Meiosis-I the pairing of homologous chromosomes take place during ----- stage.
- 17.Less production of Insulin causes-----
- 18.----- is called as the conductor of endocrine orchestra.

### **Lesson-4 Reproduction in Plants**

- 19.This is the one of the methods of reproduction in unicellular organisms like amoeba and bacteria in which they split into two equal halves and produce new ones is called-----
- 20.In sexual reproduction of flowering plants,the first event involved in this is-----
- 21.The fertilized ovary is fruit.the fruit develops from a single flower with multi carpellary,apocarpous superior ovary is-----
- 22.If a water soaked seed is pressed a small drop of water comes out through-----
- 23.The product of triple fusion which acts as nutritive tissue for the development of embryo is-----
- 24.The disadvantage of self pollination is-----
- 25.Pick out a case healthy state of an individual-----

### **Lesson-5 A Representative study of Mammals**

- 26.The tusks of elephants are modified-----
- 27.Normal body temperature of man is -----
- 28.Excretory organs of our body are -----
- 29.The whales are modified in to -----
- 30.The human heart beats ----- times in a minute on an average.
- 31.The structural and functional unit of kidney is -----
- 32.The Dolphins mainly eat -----
- 33.The heart is made up of -----
- 34.Milk producing glands are modification of -----
- 35.The only mammals capable of powered flight are-----

### **Lesson-6 Life Processes**

- 36.In monotropa the special type of root which absorbs nourishment is -----
- 37.The product obtained in the Anaerobic respiration of yeast is-----
- 38.Complete oxidation of glucose molecules in aerobic respiration produces ----- ATP molecules.
- 39.The xylem in the plants are responsible for-----

40. Anaerobic respiration is known as -----

### Lesson-7 Conservation of Environment

41. ----- chemical is used in seeding clouds.  
42. ----- is called as black gold.  
43. ----- is an example for product of green chemistry.  
44. ----- is example for fossil fuel  
45. ----- forms decomposes in the pond ecosystem.

### Lesson-8 Waste Water Management

46. ----- is the chief component of natural gas.  
47. -----, -----, ----- are non-renewable resources.  
48. ----- is example for water-borne disease.  
49. In Tamilnadu the largest wind energy form has been established near -----  
50. The settled and floating materials are removed by ----- treatment method.

### Answer:

- |   |                                   |
|---|-----------------------------------|
| 1. Smooth and rough stem                                      | 2. Africa                         |
| 3. Charles Darwin   | 4. Affects body cell              |
| 5. Bone marrow  | 6. Tetanus                        |
| 7. Tuberculosis   | 8. P. Falciparum                  |
| 9. Entamoeba Histolytica                                      | 10. Utensils of patients          |
| 11. B.C.G   | 12. Mothers Milk                  |
| 13. Thyroid gland   | 14. Pancreas                      |
| 15. 80-120mg  | 16. Zygote                        |
| 17. Diabetes  | 18. Pituitary                     |
| 19. Binary Fission  | 20. Pollination                   |
| 21. Aggregate Fruit   | 22. Micropile                     |
| 23. Endosperm   | 24. The seeds are less in number. |
| 25. Mr. K. is attending to his duty and spends time joyfully. |                                   |
| 26. Incisors  | 27. 98.4 °F to 98.6°F             |
| 28. Kidney  | 29. Baleen plates                 |
| 30. 72 Times  | 31. Nephron                       |
| 32. Plankton  | 33. Cardiac Muscles               |
| 34. Sweet glands  | 35. Bats                          |
| 36. Mycorrhizal root  | 37. Ethanol                       |
| 38. 38  | 39. Transport of water            |
| 40. Formation   | 41. Potassium iodide              |
| 42. Petroleum   | 43. Bio Plastics                  |
| 44. Coal  | 45. Bacteria                      |
| 46. Methane   | 47. Coal, Petroleum, Natural Gas  |
| 48. Typhoid   | 49. Kanyakumari                   |
| 50. Primary Treatment   |                                   |

### TWO MARKS QUESTIONS

#### Lesson-I Heredity and Evaluation

1. Mendel has observed Tallness as dominant character in garden pea plant, similarly tongue rolling is a dominant character in man, In a group of 60 students, 45 can roll their tongue and 15 are non rollers.  
a) In the above context, calculate the percentage of dominant and recessive characters.  
b) In garden pea plant, draw the diagrammatic representation of mono hybrid cross as explained by Mendel  
answer:  
a) 3:1

b)

♂	<b>T</b>	<b>t</b>
♀	<b>TT</b> Tall	<b>Tt</b> Tall
<b>T</b>	<b>TT</b> Tall	<b>Tt</b> Tall
<b>t</b>	<b>Tt</b> Tall	<b>tt</b> Dwarf

2. The heritable characters are varying in different species and within the same species. Name the variation in the following cases

The eye colour among the human being is varied as blue, black, brown, green, etc.

a) This is called as \_\_\_\_\_ variation, the dentition in rabbit and elephant are not the same.

b) This is called as \_\_\_\_\_ variation

**Ans:** a) intraspecific b) interspecific

3. Sexually reproducing organisms produce offsprings shown minor variations.

a) Do you agree with the above statements?

b) Among the following organisms list out the asexually reproducing organisms

[ Paramecium, Euglena, Earthworm and Bird ]

**Ans:** a) Yes, I agree with the above statements. b) Paramecium and Euglena.

4. Here is a certain important hereditary jargons fix a suitable one from the list given below.

a) \_\_\_\_\_ are the factors which form the physical basis of inheritance

b) \_\_\_\_\_ is alternate expression of same gene.

c) \_\_\_\_\_ are contrasting pairs of alleles.

[ alleles, variation, speciations, gene, allelomorph ]

**Ans:** a) gene b) alleles c) allelomorph

5. Sequentially arrange the different species of man from primitive to modern man.

[ Neanderthal man, Homo habitis, Homo erectus, homo sapiens ]

**Ans:** Homo habitis → Homo erectus → Neanderthal man → Homo sapiens.

6. Identical twins are syngenic with similar chromosomal contents. Natural clones are those who possess identical chromosomes. Fill up with the suitable word given in the bracket.

a) Identical twins are \_\_\_\_\_ (Natural clones/Induced clones.)

b) Identical twins are \_\_\_\_\_ (dissimilar to each other/similar to each other)

**Ans:** a) Natural clones b) similar to each other

7) The ancestor of particular type of frog found in India and srilanka were the same.

a) With reference to the above map identify the factor that has resulted in the formation of a new species.

b) State a few other factors that help in the formation of new species.

**Ans:** a) Geographical isolation is the factor that has resulted in the formation of new species.

b) Reproductive barrier that help in the formation of new species.

### Lesson-2 Immune system

8) In order to lead a healthy life a person should enjoy physical mental and social well being. If a person lacks any one of them, then that person is suffering from \_\_\_\_\_ **Ans:** Disease

9) Tamil selvan has inherited colour blindness from his father. Name the causative factor responsible for this defect \_\_\_\_\_ **Ans:** Mutated gene

10) Marasmus and kwashiorkar are both protein deficiency defects. Marasmus differs from kwashiorkar in enlarged belly and swelling in the face. Are these symptoms for the above diseases correct? If not correct it.

**Ans:** The Marasmus symptoms are related to kwashiorkar. In marasmus, the child loses weight and suffer server diarrhea and it will appear as though bones are covered by the skin.

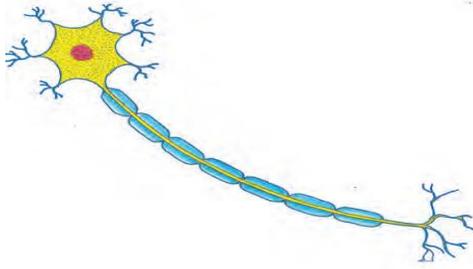
11. Kavitha is suffering from common cold. What are the questions you will put forth to kavitha confirm the disease?

**Ans:** a) Is there any flow of mucous from the nose?

b) Is there any headache and slight rise in temperature?

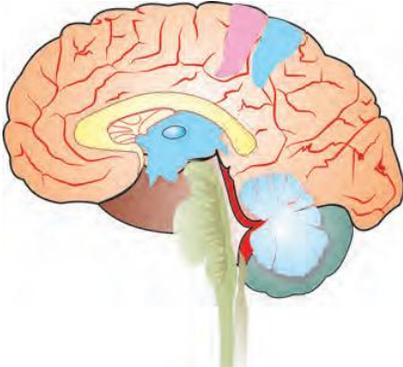
**Lesson-III Structure and functions of Human body.**

12) Copy the diagram and label any two parts in the group given.



13. This diagram is human brain and the functions of different parts are given below.

- a) seat of smell      b) seat of vision.



14. Based on relationship fill in the blanks.

Thyroxine: Personality hormone. Adrenaline: \_\_\_\_\_ (Emergency hormone)

15. Pick out the item which has sequential arrangements.

- (a) Zygotene → Leptotene → Pachytene → Diplotene → Diakinesis  
(b) Diakinesis → Zygotene → Leptotene → Pachytene → Leptotene  
(c) Leptotene → Zygotene → Pachytene → Diplotene → Diakinesis

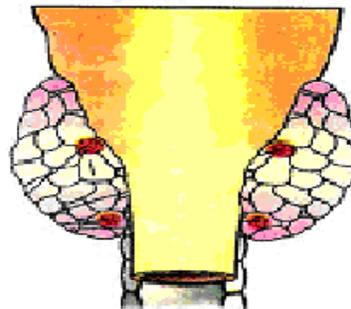
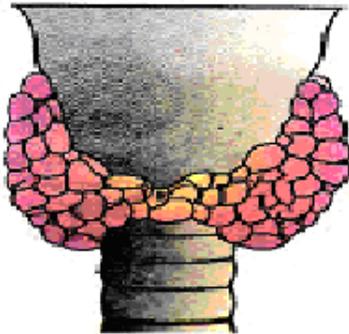
**Ans:** Leptotene → Zygotene → Pachytene → Diplotene → Diakinesis

16) The important event of meiosis is the crossing over. It occurs during.

[Leptotene, pachytene, diplotene, Zygotene]

**Ans:** Pachytene

17. Redraw the given diagram and label the following parts. [Vocal cord, Thyroid, trachea]



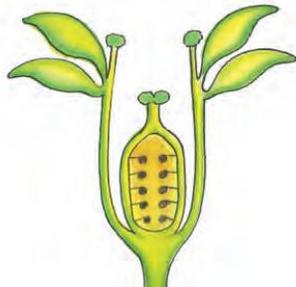
18. Redraw the given diagram and label the following parts.

[Pancreas, Islets of Langerhans, Pancreatic duct, Duodenum, Stomach]



**Lesson-IV Reproduction in plants**

- 19.a) Identify the given fig. A and B  
 b) Which part of the A is modified into B



**A**



**B**

**Ans:** a) A-gynoecium      B-mango-fruit      b) ovary

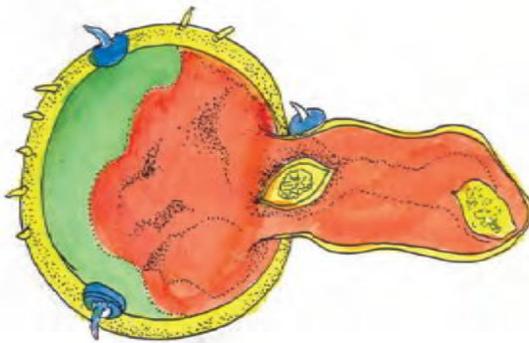
20) In balsam plant the seeds fall off far away from the mother plant.

- a) Is the statement correct (or) incorrect?    b) Give reason?

**Ans:** a) this statement is incorrect      b) Given reason: Because it has Autochory mechanism of seed dispersal.  
 Fruits of the balsam burst with a sudden jerk and disperse the seeds by an explosive mechanism

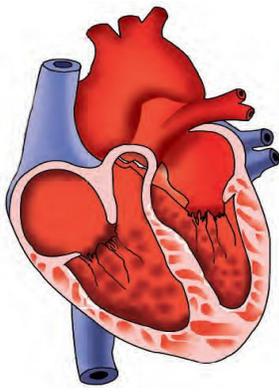
21. Redraw the diagram and label the following parts.

- a) Exine      b) Tube nucleus



**LESSON 5. A REPRESENTATIVE STUDY OF MAMMALS**

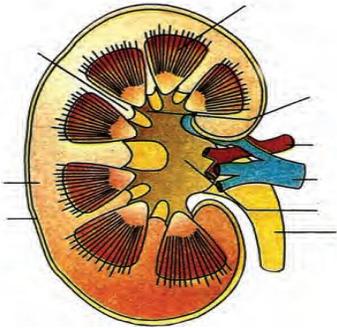
22. Based on relationship fill up- Whale : Baleen Plate, Bat : \_\_\_\_\_ **Ans:** Forelimbs modified into wings  
 23. Fill up- Plasma : Fibrinogen, RBC : carriage of Oxygen, WBC: \_\_\_\_\_ (Ans) Phagocytosis engulfing the germs  
 24. Master chemists of our body are Kidneys. Justify. **Ans :** Kidneys maintain the chemical composition of blood.  
 25. Copy down the diagram and label the parts as per A and B in the diagram.



A)The chamber which collects the blood from the lungs . **Ans : Left Auricle.**

B)The blood vessel which carries the blood to the lungs **Ans : Plumonary artery**

26.Label the following parts in the L.S of kidney. Cartex, medullary, pyramid, calyx

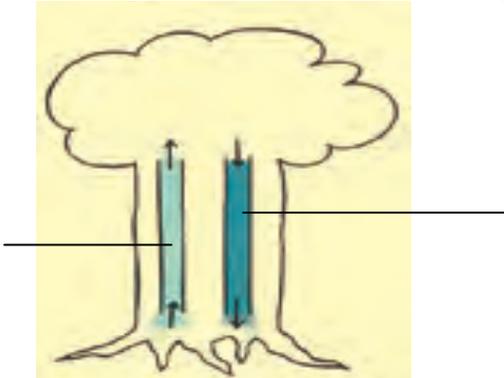


b. Human body temperature is maintained at 98.4<sup>0</sup> F to 98.6<sup>0</sup> F. The following list contains the organs which regulate the body temperature and a few other organs also. Pick out the organs which regulate the body temperature.

(Ans) Skin, kidney, Lungs, Blood.

**LESSON 6. LIFE PROCESSES**

27.Name the types of vascular tissues in the plant stem which are labeled as A and B



**Ans:** A.xylon B.Phloem

b) What are the materials transported through – A

**Ans:** Water, mineral salts

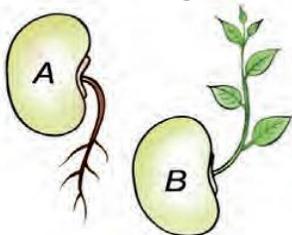
c)What are the materials transported through – B

**Ans:** Food materials

d)How do the materials in A move upwards to leave?

**Ans:** By the process of transpiration

28.Observe the diagram



a) Mention the type of movements shown in fig A and B **Ans:** A. Hydrotropism B. Phototropism

b) How does the movement differ from the movements of mimosa

**Ans:** There is no growth involved in mimosa movement.

29. In the process of respiration \_\_\_ is 6 carbon compound and lactic is \_\_\_ carbon Compound. **Ans:** Glucose, 3

30. Sugar is converted into alcohol

a) From the above statement what kind of process takes place? **Ans:** By fermentation

b) Which micro organism is involved? **Ans:** Yeast.

31. a) Conversion of milk into curd is the best example for which respiration. **Ans:** Anaerobic respiration

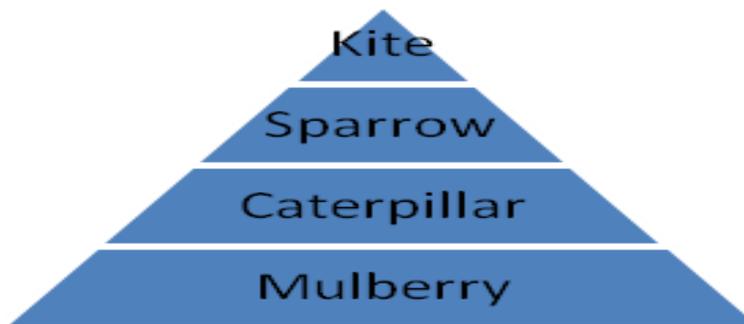
b) It is also called \_\_\_\_ **Ans:** Fermentation

**Two marks questions & answer:**

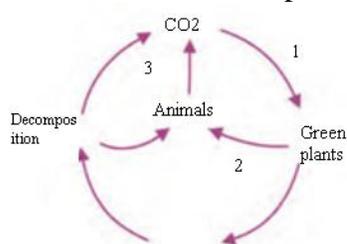
### 7-CONSERVATION OF ENVIRONMENT

32. Study the food chain below correct it and convert into a pyramid of energy

Mulberry → Sparrow → Caterpillar → Kite **Ans:** Mulberry → caterpillar → sparrow → kite



33. Atmosphere



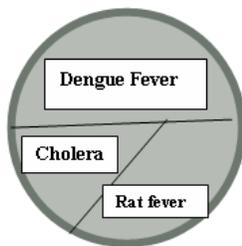
a) Name the process noted as no 1 and 3

**Ans** 1- Process is photosynthesis 3-Process is respiration

b) Define the process. **Ans:** It is the synthesis of starch by using CO<sub>2</sub>, H<sub>2</sub>O chlorophyll and sunlight

c) Name one fossil fuel **Ans:** Coal

### LESSON 8-WASTE WATER MANAGEMENT



34. The pie diagram represents in survey result of infectious diseases of a village during 2008-2009, Analyse it and answer the chart.

a) Which diseases affect the majority of the population? **Ans:** Dengue fever, Chikungunya

b) How are these disease transmitted? **Ans:** Insect vectors which breed in water

c) Write any three measures to control the other two diseases.

**Ans:** 1. There should be sufficient toilet facilities 2. Hand washing is must after toilet

3. During rainy season drink only boiling water.

35. Match the suitable renewable and non-renewable sources

Sources	A	B	C
Renewable	Coal	Wind	Petroleum
Non-Renewable	Hydrogen	Natural gas	Solar energy

**Answer:**

Sources	A	B	C
Renewable	Hydrogen	Wind	Solar energy
Non-Renewable	Coal	Natural gas	Petroleum

36. Odd one out

- a) Bio alcohol, Green diesel, Bio ethers, Petroleum. **Ans:** Petroleum  
 b) Cholera, Typhoid, Scabies, Dysentery **Ans:** Scabies

37. Pick out the suitable appliances to conserve the electric energy florescent bulbs, Copper choke, solar water heater, electric water heater, tungsten bulbs, electronic choke.

**Ans:** Solar water heater, Electronic choke.

## Part-c

### Lesson-I Heredity and Evolution

1. Human evolution has a record of changes for the past of 15 million years.

- a) Name the different species of mankind in chronological order from primitive to modern man  
 b) When were the primitive caves developed?  
 c) Narrate the life led by early man like hominids.

### Lesson-I I Health and Hygiene (Immune System)

2. Kala has delivered a baby.

- a) Suggest the immunization schedule for the baby in the first six months.  
 b) What are all the diseases that can be cured as per schedule?

3. There is a widespread outbreak of malaria in your area.

- a) Suggest some controlling measures to the local authorities concerned.  
 b) Pick out the right symptom for malaria.

4. 15<sup>th</sup> October is observed as “Handwashing Day”

- a) Tell your friend the effects of Hand washing  
 b) In a day what are the occasions in which you wash your hand?

5. HIV is a retro virus. It causes profound Immuno suppression due to the depletion of WBC, What are the tests to Identify the HIV virus? Give their prevention?

6. A diet which contains all essential nutrients in correct proportion. Tabulate some important vitamin deficiency diseases and their symptoms.

### Lesson-IV Reproduction in Plants

7. a) Name the process by which the fruit is developed.

- b) Give the development process in brief.  
 c) Draw a neat diagram of that process and label.

8. a) Write the two events involved in the sexual reproduction of flowering plant.

- b) Discuss the first event and write the types.

9. Compare aggregate fruit with multiple fruit with suitable examples.

10. Structure of a dicot seed (Bean)

### Lesson-7 CONSERVATION OF ENVIRONMENT

1. a) Classify the following substances wood paper, plastic and grasses

- b) Give detailed account on your classification.

2. In your area there is scarcity of water due to this the people are affected, so what are the measures to be taken by you to meet out the scarcity of water.

3. Smoke, smoke every where smoke. DO you agree this situations is good for health. List out the harmful effects of coal burning.

## LESSON 9. SOLUTIONS

1. A true solution is a homogenous mixture of solute and solvent. Chalk powder in water is a heterogeneous mixture. Is it a True solution?
2. The solution that contains water as the solvent is called Aqueous Solution. If carbon disulphide is a solvent in a given solution, then the solution is called \_\_\_\_\_.
3. Solubility of common salt in 100g water is 36g. If 20g of salt is dissolved in it how much more is required to attain saturation.
4. If two liquids are mutually soluble, they are called \_\_\_\_\_ liquids.
5. When sunlight passes through Window of the classrooms its path is visible. This is due to \_\_\_\_\_ of light.
6. The particles in various forms are visible only under Ultra microscope. A solution containing such particles is called \_\_\_\_\_.
7. The number of components in a binary solution is \_\_\_\_\_.
8. The mixture of gases used by deep sea divers is \_\_\_\_\_
9. Earth soil cannot store more Nitrogen than it can hold. Hence earth soil is referred to be in a state of \_\_\_\_\_.
10. In an endothermic process, solubility increases with \_\_\_\_\_ in temperature.
11. The solubility of Sodium Nitrate in water is \_\_\_\_\_
12. When sunlight passes through the window of your house, the dust particles scatter the light making the path of the light visible. This phenomenon is called as \_\_\_\_\_
13. Which of the following is a true solution?
14. Sugar solution is a \_\_\_\_\_
15. The movement of pollen grain on water \_\_\_\_\_
16. Which of the following is a Non aqueous solution?
17. Milk is a \_\_\_\_\_
18. The substance distributed as particles is called Dispersed phase. The continuous phase in which the colloidal particles are dispersed is called \_\_\_\_\_

### Answers

- |                           |                                     |
|---------------------------|-------------------------------------|
| 1. No, it is a Suspension | 2. Non – aqueous solution           |
| 3. 16g                    | 4. Miscible                         |
| 5. Scattering             | 6. Colloidal solution               |
| 7. Two                    | 8. Helium – Oxygen                  |
| 9. Saturation             | 10. Increase                        |
| 11. 92 g                  | 12. Tyndall effect                  |
| 13. Sugar solution        | 14. True solution                   |
| 15. Brownian movement     | 16. Benzene, Ether, CS <sub>2</sub> |
| 17. Liquid in Liquid      | 18. Dispersion medium               |

### 2 Mark and 5 Mark Questions

1. From the table given below furnish your points of inference.

Substance	Solubility at 25° c
NaCl	36 g
NaBr	95 g
NaI	184 g

- Ans :**
- a. In this table, solubility of some substances at 25° C are given.
  - b. NaCl, NaBr and NaI are called as solute.
  - c. Solubility of NaCl is 36 g, NaBr is 95 g and NaI is 184 g at 25° C

2. Differentiate True solution from Colloidal solution

Sl. No		True solution	Colloidal solution
1	Nature	Homogeneous	Heterogeneous
2	Scattering effect	Does not scatter light	It scatter light

3. What is Tyndall effect?

**Ans :** The phenomenon by which colloidal particles scatter light is called Tyndall effect

4. What is Super Saturated solution?

**Ans :** A solution which has more of solute at a given temperature than that of saturated solution is called Super Saturated solution

5. Find the concentration of solution in terms of weight percent if 20 grams of common salt is dissolved in 50 gram of water.

$$\text{Weight percent} = \frac{\text{Weight of the solute}}{\text{Weight of solute} + \text{Weight of solvent}} \times 100$$

Weight of solute = 20 g

Weight of solvent = 50 g

$$\text{Weight percent} = \frac{20}{20 + 50} \times 100 = 28.57 \%$$

6. You have prepared a saturated solution of sugar. Is it possible to dissolve some more grams of sugar to this solution. Justify your stand.

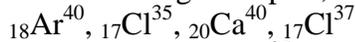
**Ans :** Yes it is possible to dissolve some more grams of sugar to this solution.

**Justification :** When we increase the temperature of the solvent we dissolve some more grams of sugar to this solution.

### 10. ATOMS AND MOLECULES

#### 2 Mark and 5 Mark Questions

1. From the following examples, form pair of Isotopes and the pair of Isobars



Ans : Isotopes -  $_{17}\text{Cl}^{35}$ ,  $_{17}\text{Cl}^{37}$

Isobars -  $_{18}\text{Ar}^{40}$ ,  $_{20}\text{Ca}^{40}$

2. Molecular mass of Nitrogen is 28. Its atomic mass is 14. Find the atomicity of Nitrogen.

$$\text{Atomicity of Nitrogen} = \frac{\text{Molecular mass of Nitrogen}}{\text{Atomic mass of Nitrogen}}$$

Molecular mass of Nitrogen = 28  
Atomic mass of Nitrogen = 14

$$\text{Atomicity of Nitrogen} = \frac{28}{14} = 2$$

3. Gram Molecular mass of Oxygen is 32 g. Density of Oxygen is 1.429g/cc. Find the Gram Molecular Volume of Oxygen.

$$\text{Gram molecular volume of oxygen} = \frac{\text{Gram molecular mass of oxygen}}{\text{Density of oxygen at STP}}$$

Gram molecular mass of oxygen = 32 g  
Density of oxygen at STP = 1.429 g / cc  
Gram molecular volume of oxygen = 32

$$\text{Gram molecular volume of oxygen} = \frac{32}{1.429} = 22.4 \text{ lit.}$$

4. 'Cl' represents Chlorine atom. 'Cl<sub>2</sub>' represents Chlorine molecule. List out any two difference between Atoms and Molecules.

Sl. No.	Atoms	Molecules
1	An atom is a non bonded entity	A molecule is a bonded entity
2	An atom may or may not exist freely	A molecule can exist freely

5. One mole of any substance contains 6.023 x 10<sup>23</sup> particles. If 3.0115 x 10<sup>23</sup> particles are present in CO<sub>2</sub>. Find the number of moles.

$$\begin{aligned} \text{Number of moles} &= \frac{\text{Number of molecules}}{6.023 \times 10^{23}} \\ \text{Number of moles of CO}_2 &= \frac{3.0115 \times 10^{23}}{6.023 \times 10^{23}} = 0.5 \text{ moles} \end{aligned}$$

6. Modern atomic theory takes up the wave concept, principles of uncertainty and other latest discoveries to give a clear cut picture about an atom. State the findings of modern atomic theory.

Ans : a. Atom is considered to be a divisible particle.

b. Atoms of the same element may not be similar in all respects. Ex: Isotopes -  ${}_{17}\text{Cl}^{35}$ ,  ${}_{17}\text{Cl}^{37}$

c. Atoms of different element may be similar in some respects. Ex: Isobars -  ${}_{18}\text{Ar}^{40}$ ,  ${}_{20}\text{Ca}^{40}$

d. Atom is the smallest particle which takes part in chemical reaction

e. Atoms of one element can be changed into atoms of other element by transmutation.

### 11. CHEMICAL REACTIONS

- $\text{Zn} + 2\text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2 \uparrow$  The above reaction is an example of .....
- A reddish brown colored element 'X' on heating in air becomes black colored compound 'Y'. X and Y are \_\_\_\_\_ and \_\_\_\_\_
- A student tested the pH of pure water using a pH paper. It showed green colour. If a pH paper is used after adding lemon juice into water, what color will he observe?
- Chemical volcano is an example of .....
- When crystals of lead nitrate on heating strongly produces \_\_\_\_\_ gas and the colour of the gas is \_\_\_\_\_.
- When aqueous solution of Silver nitrate and Sodium chloride are mixed \_\_\_\_\_ precipitate is immediately formed
- Zinc can displace Aluminum metal from aqueous solution of Aluminum Sulphate
- To protect tooth decay, we are advised to brush our teeth regularly. The nature of the tooth paste commonly used is \_\_\_\_\_ in nature.
- Vinegar is present in acetic acid. Curd contains \_\_\_\_\_ acid
- $\text{pH} = -\log_{10} [\text{H}^+]$ . The pH of a solution containing hydrogen ion concentration of 0.001M solution is \_\_\_\_\_
- On heating the green colour copper carbonate changes into ----- colour resulting in the formation of copper oxide?
- $\text{pH} + \text{pOH} = 14$ . If the value of pOH of a substance is 3, its pH is
- Any metal mixed with mercury is called \_\_\_\_\_
- The percentage of purity of Gold is calculated for making ornaments.
- $2 \text{KClO}_3 \rightarrow 2 \text{KCl} + 3 \text{O}_2$ . In this chemical reaction  $\text{MnO}_2$  acts as
- At very high temperature Ammonium dichromate decomposes to give \_\_\_\_\_
- Our body metabolism is carried out by means of \_\_\_\_\_ acid secreted in our stomach
- The ideal pH for Blood is \_\_\_\_\_
- \_\_\_\_\_ is a Double salt.
- The gas which can turn Lime water milky is \_\_\_\_\_
- The gas which will burn with a 'pop'ing sound is \_\_\_\_\_
- King of Chemicals is \_\_\_\_\_

### Answers

- |  |                           |
|--|---------------------------|
| 1. Displacement reaction               | 2. Cu, CuO                |
| 3. Red                                 | 4. Decomposition reaction |
| 5. $\text{NO}_2$ , Reddish Brown       | 6. White                  |
| 7. Zinc is more reactive than Aluminum | 8. Basic                  |
| 9. Lactic acid                         | 10.3                      |
| 11. Black                              | 12.11                     |
| 13. Amalgam                            | 14. $22 / 24 \times 100$  |
| 15. Catalyst                           | 16. Nitrogen              |
| 17. HCl                                | 18.7.4                    |
| 19. Potash Alum                        | 20. $\text{CO}_2$         |
| 21. Hydrogen                           | 22. Sulphuric acid        |

## 2 Mark and 5 Mark Questions

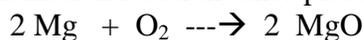
1. What type of chemical reaction takes place when

- a) Limestone is heated                      b) a Magnesium ribbon is burnt in air

Ans :                      a. Decomposition reaction takes place when limestone is heated.



- b. Combination reaction takes place when a magnesium ribbon is burnt in air.



2. The pH values of certain familiar substances are given below

Substance	pH value
Blood	7.4
Baking soda	8.2
Vinegar	2.5
Household ammonia	12

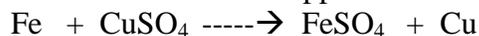
a) Which substance is acidic in nature?                      b) Which substance is basic in nature?

Ans : a. Vinegar                      b. Blood, Baking soda, Household ammonia

3. Why does the colour of Copper Sulphate change when an Iron nail is kept in it? Justify your answer.

Ans : Blue colour of copper sulphate solution changes into green colour and the iron nail acquires a brownish look.

Reason : Iron is more reactive than copper.



Explanation : Iron displaces copper from copper sulphate solution.

4. The Hydroxyl ion concentration of a solution is  $1.0 \times 10^{-8}$  M. What is the pH of the solution?

$$\begin{aligned} \text{pOH} &= -\log_{10}[\text{OH}^-] \\ &= -\log_{10}[1.0 \times 10^{-8}] && \text{pOH} = 8 \\ \text{pH} &= 14 - \text{pOH} \\ &= 14 - 8 && \text{pH} = 6 \end{aligned}$$

5. Match the following

Acid present	Source
Citric	Apple
Tartaric	Curd
Lactic	Lemon
Malic	Grape

Ans :

Acid present	Source
Citric	Lemon
Tartaric	Grape
Lactic	Curd
Malic	Apple

## 12. PERIODIC CLASSIFICATION OF ELEMENTS

- In the modern Periodic Table periods and Groups are given. Periods and Groups indicate \_\_\_\_\_
- Third period contains 8 elements, out of these elements how many elements are non-metals?
- An element which is an essential constituent of all organic compounds belongs to \_\_\_ group.
- Ore is used for the extraction of metals profitably. Bauxite is used to extract Aluminum, it can be termed as \_\_\_
- Gold does not occur in the combined form. It does not react with air (or) water. It is in \_\_\_\_\_.
- A process employed for the concentration of sulphide ore is \_\_\_\_\_.
- Coating the surface of iron with other metal prevents it from rusting. If it is coated with thin layer of zinc it is called \_\_\_\_\_
- Any metal mixed with mercury is called amalgam. The amalgam used for dental filling is \_\_\_\_\_.
- Assertion: In thermite welding, aluminium powder and  $\text{Fe}_2\text{O}_3$  are used.  
Reason: Aluminium powder is a strong reducing agent. Does the reason satisfy the assertion?
- Elements of Group 3 to 12 in the long form of periodic table are called.
- Atomic number of Iron is 26. Its electronic configuration is

12. To design the body of the aircraft \_\_\_\_\_ alloys are used.
13. Modern periodic law states that the physical and chemical properties of elements are the periodic function of their -----
14. Second group element are called \_\_\_\_\_
15. The Modern Periodic law was given by \_\_\_\_\_
16. According to Moseley the elements are arranged in the increasing order of their \_\_\_\_\_
17. Atomic number is \_\_\_\_\_
18. Number of Transition Elements in 5<sup>th</sup> row of the Modern Periodic table is \_\_\_\_\_
19. Number of elements in the First row is \_\_\_\_\_
20. First Group elements are called as \_\_\_\_\_
21. The 17<sup>th</sup> Group elements are called as \_\_\_\_\_
22. Purity of Gold is measured in \_\_\_\_\_
23. Lanthanides and Actinides are called as \_\_\_\_\_
24. Copper, Silver and Gold are called as \_\_\_\_\_

### Answers

- |                                    |                           |
|------------------------------------|---------------------------|
| 1. Rows and Columns                | 2.5                       |
| 3. 14 <sup>th</sup> group          | 4. Ore                    |
| 5. Native state                    | 6. Froth floatation       |
| 7. Galvanization                   | 8. Ag – Sn amalgam        |
| 9. Yes                             | 10. Transition elements   |
| 11. 2, 8, 14, 2                    | 12. Aluminum              |
| 13. Atomic number                  | 14. Alkaline earth metals |
| 15. Moseley                        | 16. Atomic number         |
| 17. Number of Protons or Electrons | 18. 10                    |
| 19. 2                              | 20. Alkali metals         |
| 21. Halogens                       | 22. Carat                 |
| 23. Inner Transition elements      | 24. Coinage metals        |

### 2 Mark and 5 Mark Questions

1. **Assertion:** Greenish layer appears on Copper vessels if left uncleaned.

**Reason :** It is due to the formation of layer of basic Copper carbonate. Give your correct option.

- a) Assertion and reason are correct and relevant to each other
- b) Assertion is true but reason is not relevant to the assertion

**Ans :** Assertion and reason are correct and relevant to each other

2. Can rusting of Iron nail occur in distilled water? Justify your answer.

**Ans :** Rusting of Iron nail can occur in distilled water.

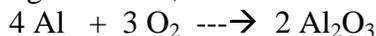
**Reason :** When iron reacts with distilled water and air, it forms a layer of brown hydrated Ferric oxide.

3. Iron reacts with con.HCl and con.H<sub>2</sub>SO<sub>4</sub> But it does not react with con.HNO<sub>3</sub> Suggest your answer with proper reason.

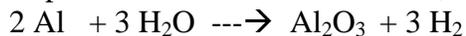
**Ans :** When iron is dipped in con.HNO<sub>3</sub> it becomes chemically inert or passive due to the formation of a layer of iron oxide on its surface.

4. X is a silvery white metal. X reacts with oxygen to form Y. The same compound is obtained from the metal on reaction with steam with the liberation of Hydrogen gas. Identify X and Y.

**Ans :** On heating at 800° C, aluminium burns very brightly forming its oxide.



When steam is passed over red hot aluminium, hydrogen is produced.



X – Al ( Aluminium)                      Y - Al<sub>2</sub>O<sub>3</sub> (Aluminium oxide)

5. Match the following

Metal	Ore
Aluminium	Galena
Copper	Bauxite

Iron	Copper glance
Lead	Haematite

Ans :

Metal	Ore
Aluminium	Bauxite
Copper	Copper glance
Iron	Haematite
Lead	Galena

### 13.CARBON AND ITS COMPOUNDS

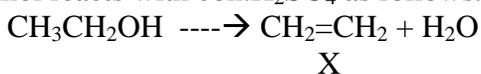
- Assertion: Chemical bonds in organic compounds are covalent in nature.  
**Reason:** Covalent bond is formed by the sharing of electrons in the bonding atoms.  
Does the reason satisfy the given assertion?
- Assertion: Diamond is the hardest crystalline form of carbon  
**Reason:** Carbon atoms in diamond are tetrahedral in nature.  
Verify the suitability of reason to the given Assertion mentioned above.
- Assertion: Due to catenation a large number of carbon compounds are formed.  
**Reason:** Carbon compounds show the property of allotropy. Is the reason holding good for the given Assertion.
- Buckminster Fullerene is the allotropic form of \_\_\_\_\_
- Even though it is a non metal, graphite conducts electricity. It is due to the presence of .....
- Formula of methane is CH<sub>4</sub> and its succeeding member ethane is expressed as C<sub>2</sub>H<sub>6</sub>. The common difference of succession between them is (CH<sub>2</sub>)
- IUPAC name of first member of alkyne is .....
- Out of Ketonic and Aldehydic group which is the terminal functional group?
- Acetic acid is heated with a solid 'X' kept in a test tube. A colourless and odourless gas (Y) is evolved. The gas turns lime water milky when passed through it. Identify X and Y.
- Assertion: Denaturation of ethyl alcohol makes it unfit for drinking purposes.  
**Reason:** Denaturation of ethyl alcohol is carried out by methyl alcohol.  
Check whether the reason is correct for assertion.
- Ethanol on oxidation in the presence of alkaline potassium permanganate or acidified potassium dichromate gives the following acid.
- The functional group of carboxylic acid is \_\_\_\_\_
- The saturated hydrocarbons form homologous series with the general formula \_\_\_\_\_

#### Answers

- Yes
- No, Carbon atoms in diamond forms a rigid three dimensional structure
- No
- Carbon
- Free electrons
- CH<sub>2</sub>
- Ethyne
- Aldehyde group – CHO
- X - Na<sub>2</sub>CO<sub>3</sub>, Y - CO<sub>2</sub>
- Yes, methyl alcohol is poisonous in nature, when mixed with ethyl alcohol it becomes poisonous
- Ethanoic acid or Acetic acid
- COOH
- C<sub>n</sub>H<sub>2n+2</sub>

#### 2 Mark and 5 Mark Questions

- Diamond is the hardest allotrope of Carbon. Give reason for its hardness.
- Ethanol reacts with con.H<sub>2</sub>SO<sub>4</sub> as follows.



- Write the name of X.
- Compound X is saturated or Unsaturated

**Ans :** a) The name of X is Ethene

b) Compound X is Unsaturated

3. What are the uses of Ethanol?
4. An organic compound (A) is widely used as a preservative in pickles and has a molecular formula  $C_2H_4O_2$ . This compound reacts with ethanol to form a sweet smelling compound (B)
  - a) Name the compounds A and B
  - b) Name the process and write corresponding chemical equation.
5. Write the possible isomers and give their IUPAC names using the formula  $C_4H_{10}$

### 5. Laws of Motion and Gravitation

#### Part A

1. The acceleration in a body is due to \_\_\_\_\_ force . (unbalance)
2. The physical quantity which is equal to rate of change of momentum is \_\_\_\_\_. (force)
3. The momentum of a massive object at rest is \_\_\_\_\_. (zero)
4. The weight of 50 kg person at the surface of earth is \_\_\_\_\_. (490N)
5. The freezing of biotechnology products like vaccines require \_\_\_\_\_ freezing systems. (nitrogen)

#### 16. Electricity and Energy

6. The potential difference required to pass a current 0.2A in a wire of resistance 20 ohm is \_\_\_\_\_. (4v)
7. The electric bulbs have resistance in the ratio 1:2 . If they are joined in series, the energy consumed in these are in the ratio \_\_\_\_\_. (1:2)
8. Kilowatt hour is the unit of \_\_\_\_\_. (electric energy)
9. \_\_\_\_\_ surface absorbs more heat than any other surface under identical conditions. (Black)
10. The atomic number of natural radioactive element is \_\_\_\_\_ (greater) than 82.

#### 17. Magnetic effect of electric current and light

11. The magnification produced by a mirror is  $1/3$ . Then the type of mirror is \_\_\_\_\_. (concave)
12. In electric current through a metallic conductor produces \_\_\_\_\_ around it. (magnetic field)
13. The field of view is maximum for \_\_\_\_\_. (convex mirror)
14. An object is placed 25cm from a convex lens whose focal length is 10cm. The image distance is \_\_\_\_\_. (16.66cm)
15. An emf is produced in a circuit whenever the magnetic flux linked with a coil changes is called \_\_\_\_\_. (electro magnetic induction).

#### Part B

- 1) Fill in the blanks
  - a) Force = mass x acceleration, then momentum = mass x velocity
- 2) The name of some organizations which are associated with chendrayan I mission are given below but some of them are not, List out wrong ones.  
(ISRO, BARC, NASA, ESA, WHO, ONGC) **Ans** : BARC, WHO, ONGC
- 3) Correct the mistakes ,if any , in the following statements.
  - A) One newton is the force that produces an acceleration of  $1 \text{ ms}^{-2}$  in an object of 1 gram mass.  
**Ans**: One Newton is the force that produces an acceleration of  $1 \text{ ms}^{-2}$  in an object of 1 kilogram mass
  - B) Action and reaction is always acting on the same body.  
**Ans**: Action and reaction is always acting on the different bodies.
- 4) The important use of cryogenics is cryogenic fuels. What do you mean by cryogenic fuels?  
**Ans** : The fuels which held at below 123k are known as cryogenic fuels.
- 5) As a matter of convention, an anticlockwise moment is taken as Positive and a clockwise moment is known as Negative.
- 6) **A: Assertion**: Liquid nitrogen is the most commonly used element in cryogenics.  
**R: Reason**: Which is not legally purchasable around the world.
  - a) corect, correct b) wrong, correct, c) correct, wrong d) wrong, wrong.**Ans**: c) A-correct, R-wrong.
- 7)  $5N \leftarrow \circ \rightarrow 5N$ 
  - a) Resultant force is Zero b) can ball move ? Can't move
- 8) Which would require a greater force for accelerating a 2 kg of mass at  $4 \text{ ms}^{-2}$  or a 3 kg mass at  $2 \text{ ms}^{-2}$ ?
 

$F_1 = m \times a$	$F_2 = m \times a$
Given $m_1 = 2 \text{ kg}$	Given $m_2 = 3 \text{ kg}$

$$a_1 = 4 \text{ ms}^{-2}$$

$$\text{Thus } F_1 = m_1 \times a_1$$

$$= 2 \times 4$$

$$= 8\text{N}$$

$$a_2 = 2 \text{ ms}^{-2}$$

$$F_2 = m_2 \times a_2$$

$$= 3 \times 2$$

$$= 6\text{N}$$

- 9)  $F = \frac{G m_1 m_2}{d^2}$  is the mathematical form of Newton's law of gravitation.

Give the statement of Newton's law of gravitation.

Ans : Every object in the universe attracts every other object with a force which is directly proportional to the product of their masses and inversely proportional to the square of the distance between them.

- 10) When a gun is fired it exerts forward force on the bullet. the bullet exerts an equal and opposite reaction force on the gun. This results in the recoil of the gun why?  
 Ans : Newton's third law of motion states that for every action there is equal and opposite reaction. This results in the recoil of the gun.

- 11) Observe the figure and write the answer.

Diagram

a) The force which balance A exerts on balance B is called action

b) The force of balance B on balance A is called reaction

- 12) Fill ups

A) Unit of momentum is  $\text{Kgms}^{-1}$ , then unit of force is \_\_\_\_\_ (Newton)

B) Mass is the amount of matter present in a body, hence \_\_\_\_\_ is force which given mass feels due to the gravity (weight)

- 13) In the absence of air, all bodies will fall at the same rate. How will you justify this Statement?

**Ans:** 1. It is the air resistance that shows down a piece of paper or a parachute falling Under gravity.

2. If a heavy stone and a parachute are dropped where there is no air, both will fall together at the same rate.

### 16. Electricity and Energy

14. From the following statements write down that which does not represent ohm's law.

(a) Current/potential difference = constant

(b) Potential difference/current = constant

(c) Current = resistance x potential difference.

**Ans:** Current = resistance x potential difference

15. Fill in the blanks.

(a) potential difference = Voltmeter, then current: Ammeter.

(b) power plant: conventional source of energy then solar energy Non-conventional source of energy

16. In the list of source energy given below, some of them are wrong. List out the wrong ones.

(Wind energy, solar energy, hydro electric power, nuclear energy, tidal energy, wave energy, geo-thermal energy)

**Ans:** Wind energy, hydro electric power, geo-thermal energy.

17. Correct the mistakes if any, in the following statements.

(a) A good source of energy would be one which would do a small amount of work per unit volume of mass.

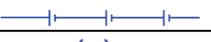
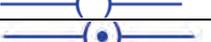
(b) Any source of energy we use to do work is consumed and can be used again.

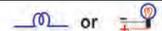
#### Correct statements

(a) A good source of energy would be one which would do a great amount of work per unit volume of mass.

(b) Any source of energy we use to do work is consumed and cannot be used again.

18. The schematic diagram in which different components used is called a circuit diagram. What do you mean by the term components?

Components	Symbols
An electric cell	
A battery or a combination of cells	
Plug key (open)	
Plug key (closed)	
Resistance	

Components	Symbols
Electric bulb	 or 
Variable resistance	 or 
A wire point	
Ammeter	
Voltmeter	

19) We know that  $\gamma$ -rays are harmful radiations emitted by natural radioactive substances.

(a) Which are other radiations from such substance? **Ans:** (a)  $\alpha$  and  $\beta$

(b) Tabulate the following statements as applicable to each of the above radiations.

	Properties	$\alpha$	$\beta$	$\gamma$
(1)	They are electromagnetic radiation.	✓	✓	✓
(2)	They have high penetrating power	less	Higher than $\alpha$	Very high
(3)	They are electrons	-	Electrons	-
(4)	They are neutrons	-	-	Newton's

20) Fuse wire is made up of an alloys of lead and tin Which has high resistance and low melting point

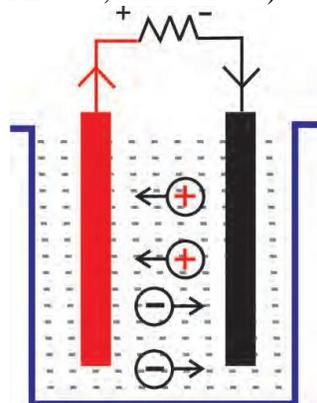
21) Complete the table choosing the right terms from within the brackets.

(Zn, copper, carbon, lead, leadoxide, aluminium)

+ve electrode	Darrid cell	<u>Copper</u>
-ve electrode	Leclanchecell	<u>Zinc</u>

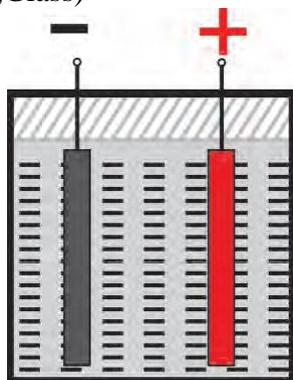
22) Redraw the give diagram and label the following parts:

(copper, Znic, dilute H<sub>2</sub>SO<sub>4</sub>, Glass vessel)



23) Redraw the give diagram and label the following parts.

(pb, pbo<sub>2</sub>, H<sub>2</sub>SO<sub>4</sub>, Glass)



24). Match the following.

- |                     |                     |
|---------------------|---------------------|
| (1) Michael faraday | - First battery(3)  |
| (2) Ohm             | - Radio activity(4) |
| (3) Volta           | - Dynamo(1)         |
| (4) Becquerel       | - Ohm's law(2)      |

25).What are the precautions are to be taken for those,who are working in radiation laboratories?

1. Radioactive materials are kept in thick-walled lead container.
2. lead aprons and lead gloves are used while working in hazardous area.

26).Observe the circuit given below and find the resistance across AB

\*\*\*\*\*

In A

$$\frac{1}{R_A} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$= 1/1 + 1/1$$

$$= 1 + 1/1 = 2$$

$$R_A = 1/2 \Omega$$

In B,

$$\frac{1}{R_B} = \frac{1}{R_3} + \frac{1}{R_4}$$

$$= 1/1 + 1/1 = 1 + 1/1 = 2$$

$$R = R_A + R_B$$

$$R = \frac{1}{2} + \frac{1}{2} = 1 \Omega$$

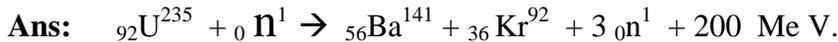
28).Match the following.

- |                        |             |
|------------------------|-------------|
| 1.Electric current     | - Volt(2)   |
| 2.Potential difference | - Ohm(3)    |
| 3.Resistance           | - Watt(4)   |
| 4.Electric power       | - Ampere(1) |

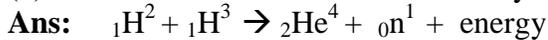
29).Match the following

- |                      |                           |
|----------------------|---------------------------|
| 1.Joule's law        | - $V = IR$ (2)            |
| 2.Ohm's law          | - Roentgen(5)             |
| 3.Series connection  | - $H = I^2Rt$ (1)         |
| 4.Parrel connections | - $R_1+R_2+R_3$ (3)       |
| 5.Radiation          | - $1/R_1+1/R_2+1/R_3$ (4) |

30) (a)Mention fission reactions with  ${}_{92}\text{U}^{235}$



(b)Mention the fusion reactions in the hydrogen bomb?



31) Three Resistance having the values  $5\Omega, 10\Omega, 30\Omega$  are connected parallel with each other, calculate the total circuit resistance.

**Ans:**  $R_1=5 \Omega, R_2=10 \Omega, R_3=30 \Omega.$

These Resistance are connected parallel,

$$\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$= \frac{1}{5} + \frac{1}{10} + \frac{1}{30}$$

$$= \frac{6}{30} + \frac{3}{30} + \frac{1}{30}$$

$$= \frac{10}{30}$$

$$\frac{1}{R_p} = \frac{1}{3}$$

Therefore,  $R_p = 3 \Omega$

### 17. Magnetic effect of electric current and light

32) a) For a motor : a permanent magnet, then commercial motor : -----(Electromagnet)

b) Focal lengths of a lens ; Meter, then for power of a lens:----- (Dioptre)

33) Correct the mistakes, if any in the following statements:

a) Magnetic field is a quantity that has magnitude only.

b) The magnetic field lines emerge from the south pole and merge at the north pole.

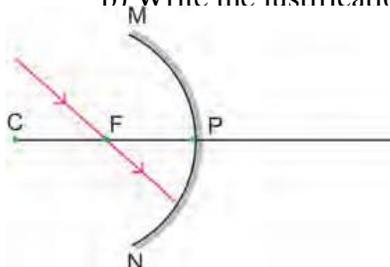
**Ans:** a) Magnetic field is a quantity that has both magnitude and direction.

b) The magnetic lines emerge from the North Pole and merge at the South Pole.

34) The ray diagram shown below is introduced to show how a concave mirrors forms an image of an object,

a) Identify the mistake and draw the correct ray diagram.

b) Write the justification for your corrections.



b) A ray passes through the principal focus of a concave mirror after reflection will emerge parallel to principal axis.

35) In traffic signals----- (red) colour light is used to stop vehicles because it is having----- (longer) wave length.

36) Considering this write down the names of the parts of the human eye.

a) Dark muscular diaphragm that controls the pupil

b) The screen at where the image is formed by eye lens.

**Ans:** a) Iris b) Retina

37) If the current flows in one direction, the north pole of the compass needle would move towards the east. If the current flows in opposite direction, you will see that the needle moves in opposite direction, justify your answer.

**Ans:** It means that the direction of magnetic field produced by the electric current depends upon the direction of flow of current.

38) You know that myopia is a common refractive defects of vision. person with this defect can see only nearby objects clearly. Using concave lens of suitable power this defect is corrected.

a) Mention other two types of defects like this.

b) Explain how can we correct it.

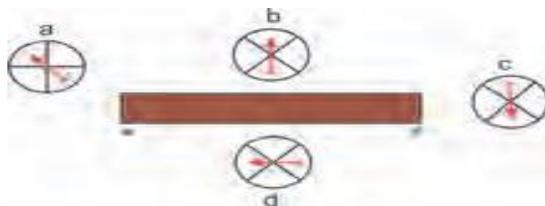
**Ans:** a) 1. Hypermetropia 2. Presbyopia

b) i) Hypermetropia can be corrected by using a convex lens of appropriate power.

ii) Presbyopia can be corrected by using a bi-focal lenses.

39) Which of the compass needle orientations in the following diagram might correctly describe the magnet's field at that point

a)



40) Find odd one out:

1. Angle of incidence, angle of refraction, angle of emergence, right angle **Ans:** Right angle

2. Convex mirror, concave mirror, plane mirror, convex lens. **Ans:** Plane mirror

41) If the focal length of the concave lens is 2m, find out power of the lens.

Focal Length of Concave Lens is = 2 m

Therefore Power of the lens (p) =  $1/f$

=  $1/2$

P = 0.5 dioptre

42) **Match:**

1. Iris

- elongation of the eye ball

- 2.cornia - dark muscular diaphragm
- 3.Presbyopia - retina
- 4.Age of the universe - thin transparent membrane
- 5.Eye Lens - Hubble space telescope

**Ans:**

- 1.Iris - dark muscular diaphragm
- 2.cornia - thin transparent membrane
- 3.Presbyopia - elongation of the eye ball
- 4.Age of the universe - hubble space telescope
- 5.Eye Lens - retina

43) a)Converts mechanical energy in to electrical energy:Electric Generators

b)Converts electrical energy in to mechanical energy:Electric motor

44) You must have seen and appreciated the spectacular colours in a rainbow.

- 1)What is dispersion of light
- 2)Name the colours found in the light beam

**Ans:**1)The splitting of light into its component colours is called dispersion.

2)Violet,indiogo,blue,green,yellow orange,red are the colours are seen in spectrum.

45) A concave lens has focal length of 15cm.At what distance should the object from the Lens be placed so that it forms an image 10 cm from the lens?

**Solution:**

$$V = -10 \text{ cm}, F = -15 \text{ cm} \quad c1=?$$

$$1/v - 1/u = 1/f$$

(or)

$$1/u = 1/v - 1/f$$

$$1/u = 1/-10 - 1/-15$$

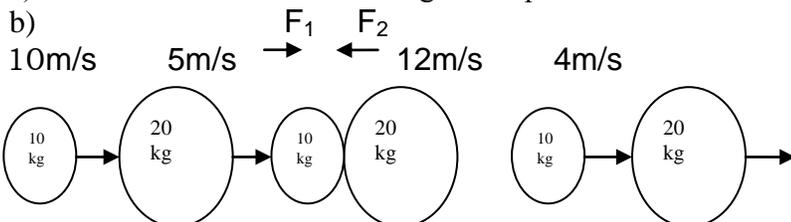
$$1/u = -3 + 2 / 30 = -1/30$$

$$U = -30 \text{ cm}$$

Thus, the object distance is 30 cm.

### 15.Laws of Motion and Gravitation

1. a) Newton's first law of motion gives a qualitative definition of force. Justify.



The figure represents two bodies of masses 10 kg and 20 kg and moving with an initial velocity of  $10 \text{ ms}^{-1}$  and  $5 \text{ ms}^{-1}$  respectively. They are colliding with each other. After collision they are moving with velocities  $12 \text{ ms}^{-1}$  and  $4 \text{ ms}^{-1}$  respectively. The time of collision be 2s. Then calculate  $F_1$  and  $F_2$ .

2. a) Space stations are used to study the effects of long-space flight on the human body. Justify.

b)  $G \frac{m_1 m_2}{d^2}$

$F = \frac{G m_1 m_2}{d^2}$  is the mathematical form of Newton's law of gravitation.

G-gravitational constant,  $m_1$  and  $m_2$  are the masses separated by a distance  $d$  and then give the statement of Newton's law of gravitation.

3.Explain Newton's first law of motion with axample.

4.Chandrayaan 1 is a moon traveler. List the achievements of chandrayaan 1.

### 17. Magnetic effect of electric current and light

1.a) Label the following in the given prism diagram given below.

- i) incident ray
  - ii) refracted ray
  - iii) emergent ray
  - iv) angle of refraction
  - v) angle of deviation
  - vi) angle of emergence.
- b) The refractive index of diamond is 2.42.

What is the meaning of this statement in relation to speed of light?

2. a) Redraw the above diagram.

- b) This diagram represents \_\_\_\_\_
- c) Label the parts of the diagram.
- d) Write the principle of the name of the device denoted by this diagram.

