

Ans: ii) Beta

12. Identical twins are born as a result of fertilization between _____
- i) Two eggs and two sperm
 - ii) Two eggs and one sperm
 - iii) One egg and one sperm
 - iv) One egg and two sperm.

Ans: iii) One egg and one sperm

13. Identify the incorrect statement about identical twin.
- i) Developed from a single zygote
 - ii) Always of the same sex.
 - iii) Look alike in many aspects
 - iv) Differ in their blood groups

Ans: iv) Differ in their blood groups

14. The correct statement about Neanderthal man is _____
- i) The first human like hominid.
 - ii) Started agriculture.
 - iii) ate meat and walked erectly.
 - iv) Buried the dead.

Ans : iv) Buried the dead.

15. The inheritance of characteristics through generation is called “heredity”. In Mendel’s *Pisum Sativum* plant, the genetic material present is _____
- i) DNA
 - ii) RNA
 - iii) Protein
 - iv) Cytoplasm

Ans: i) DNA

Lesson – 2

IMMUNE SYSTEM

1. Pick out a case of healthy state of an individual
- i) Mr. X is recovering from an infection diseases
 - ii) Mr.Y takes insulin injection everyday
 - iii) Mrs.Z is very depressed
 - iv) Mr. K does his duty and spends time joyfully

Ans: iv) Mr. K does his duty and spends time joyfully

2. Which one of the following is not socially balanced?
- i) He enjoys a birthday party
 - ii) He behaves rudely over trivial matters
 - iii) He adjusts well to the surrounding situation
 - iv) He attends to his ailing mother at the hospital

Ans: ii) He behaves rudely over trivial matters

3. _____ is a bacterial disease
 i) Meningitis ii) Rabies iii) Tetanus iv) Smallpox
Ans: iii) Tetanus
4. One of the following is transmitted through air. Find it out
 i) Tuberculosis ii) Meningitis iii) Typhoid iv) Cholera
Ans: i) Tuberculosis
5. The most serious form of malaria is caused by Plasmodium _____
 i) Ovale ii) Malariae iii) Falciparum iv) Vivax
Ans: iii) Falciparum
6. An example of protozoan infecting our intestine is _____.
 i) Plasmodium vivax ii) Entamoeba histolytica
 iii) Trypanosoma gambiense iv) Taenia solicern
Ans: ii) Entamoeba histolytica
7. One of the means of indirect transmission of a disease is _____
 i) sneezing ii) coughing
 iii) through placenta iv) using utensils of patients
Ans: iv) Using utensils of patients
8. When antibodies, extracted from some other animals are injected into your body what kind of immunity do you gain?
 i) Artificially active acquired immunity.
 ii) Artificially passive acquired immunity.
 iii) Naturally active acquired immunity.
 iv) Naturally passive acquired immunity.
Ans: ii) Artificially passive acquired immunity.
9. The first vaccine injected into a just born baby is _____.
 i) oral polio ii) DPT iii) DPT and oral Polio iv) BCG
Ans : iv) BCG
10. 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

- c) Organelles of Cyton d) Myelin sheath of Axon

Ans: b) Synaptic knobs

13. The endocrine gland related to the immune system is _____
a) Thyroid b) Thymus c) Adrenal d) Pineal

Ans: b) Thymus

14. The hormone administered by doctors to a pregnant woman to help in childbirth during the time of natural delivery is _____
a) Oestrogen b) Progesterone c) Insulin d) Relaxin

Ans: d) Relaxin

15. The important event of meiosis is the crossing over. It occurs during _____.
a) Leptotene b) Pachytene c) Diplotene d) Zygotene

Ans: b) Pachytene

16. Reduction division is the process by which gametes are produced. The cells in which reduction division take place are _____
a) germinal epithelial cells b) the sensory epithelial cells
c) cuboidal epithelial cells d) columnar epithelial cells

Ans: a) germinal epithelial cells

17. In Amoeba, the cell division takes place _____
a) Involving changes in the chromatin reticulum
b) Without involving changes in the chromatin reticulum
c) Leading to reduction in the number of chromosomes
d) Without dividing the nucleus.

Ans : b) Without involving changes in the chromatin reticulum

18. Pick out the item which has sequential arrangement.
a) Zygotene → Leptotene → Pachytene → Diplotene → Diakinesis
b) Diakinesis → zygotene → Leptotene → Pachytene → Diplotene
c) Leptotene → zygotene → Pachytene → Diplotene → Diakinesis

Ans : c) Leptotene → zygotene → Pachytene → Diplotene → Diakinesis

19. Polio is a viral disease and the affected child suffers from physical disability of limbs. Which system of the body is mostly affected due to this infection?

- a) Nervous System b) Digestive system
c) Respiratory system d) Excretory System

Ans : a) Nervous System

20. Blinking when a beam of light is suddenly focused on the eyes and sudden withdrawal of hand upon touching a hot body are some of the examples of reflex actions. Which part of the central nervous system acts as the centre for the actions?

- a) Forebrain b) Spinal cord c) Hindbrain d) Synapse

Ans: b) Spinal cord

21. The following are the parts of a neuron:

- a) Axon b) Terminal branches c) Cyton d) Dendrites

The correct pathway of nerve impulse through these parts are_____

- a) b,a,d,c b) d,c,a,b c) b,d,a,c d) a,d,b,c

Ans: b) d,c,a,b

22. The minor surgeries in the body, doctors administer local anaesthesia to a part of the body so that the pain will not be felt by the patient. At which part, do you think, the nerve impulse is being arrested due to the effect of anaesthesia?

- a) at cyton b) at axon
c) at synapse d) in the middle of axon

Ans : c) at synapse

23. Assertion (A) : All spinal nerves are mixed nerves.

Reason (R) : Each spinal nerve has sensory root and motor root.

- a) Both 'A' and 'R' are true and 'R' explains 'A'
b) Both 'A' and 'R' are true but 'R' doesn't explain 'A'
c) Only 'A' is true but 'R' is false.
d) 'A' is false but 'R' is true

Ans: a) Both 'A' and 'R' are true and 'R' explains 'A'.

LESSON - 4

REPRODUCTION IN PLANTS

1. The method of reproduction in unicellular organisms like amoeba and bacteria in which they split into two equal halves and produce new one is called _____

- i) fragmentation
- ii) binary fission
- iii) budding
- iv) spore formation

Ans: ii) binary fission

2. In sexual reproduction of flowering plants, the first event involved in this is ____

- i) fertilization
- ii) germination
- iii) regeneration
- iv) pollination

Ans: iv) pollination

3. Which of the following statement is true?

- i) Thin - walled non – mobile spores are called zoospores.
- ii) A motile asexual spore produced by some algae bacteria and fungi are Akinetes.
- iii) Uninucleate, non motile, asexual spores produced by fungus are called conidia.
- iv) Thick walled vegetative cells produced by algae during adverse conditions are called aplanospores.

Ans: iii) Uninucleate, non motile, asexual spores produced by fungus are called conidia.

4. The fertilized ovary is a fruit. The fruit that develops from a single flower with multicarpellary, apocarpous superior ovary is _____

- i) aggregate fruit
- ii) composite fruit
- iii) simple fruit
- iv) multiple fruit

Ans: i) aggregate fruit

5. If a water soaked seed is pressed, a small drop of water comes out through the _____

- i) Stomata
- ii) lenticels
- iii) micropyle
- iv) radical

Ans: iii)) micropyle

6. The mango fruit is called as stone fruit, because it has _____

- i) skinny epicarp
- ii) stony mesocarp

iii) fleshy endocarp iv) hard endocarp

Ans: iv) hard endocarp

7. Pick out the wrong statement

- i) In a dicot seed there is a short longitudinal whitish ridge called the raphae
- ii) In minute opening in a dicot seed is known as micropyle.
- iii) The rudimentary stem portion is known as radicle.
- iv) The rudimentary root portion is called radicle .

Ans: The rudimentary stem portion is known as radicle.

8. Consider the following statements regarding the dispersal of fruits and seeds by wind and select the correct answer.

- i) Fruits and seeds are dispersed with a sudden jerk by an explosive mechanism.
- ii) The fruits of tridax carry a persistent calyx modified into pappus.
- iii) The fruits of Xanthilium have sharp pointed stiff hooks.
- iv) The mesocarp of coconut is fibrous.

Ans: The fruits of tridax carry a persistent calyx modified into pappus.

9. The product of triple fusion which acts as nutritive tissue for the development of an embryo is _____

- i) Zygote ii) placenta iii) scutellum iv) endosperm

Ans : iv) endosperm

10. The disadvantage of self pollination is _____

- i) There is no wastage of pollen grains
- ii) The seeds are less in number
- iii) Self – pollination is sure in bisexual flowers.
- iv) Flowers need not depend on agents of pollination.

Ans: ii) The seeds are less in number

11. The flower is important to a plant because it helps in _____

- i) attracting ii) production of nectar
- iii) pollination iv) sexual reproduction

Ans: iv) sexual reproduction

12. The essential organs of the flower are _____
- i) Calyx and corolla ii) Androecium and Gynoecium
 iii) Calyx and Andrecium iv) corolla and Gynoecium
- Ans: ii) Androecium and Gynoecium**
13. Cross pollination is important for producing _____
- i) new varieties of plants ii) plants with better growth
 iii) disease resistant plants iv) all of the above
- Ans : iv) all of the above**
14. Anemophily occurs in _____
- i) vallisneria ii) Grass iii) coconut iv) datura
- Ans: ii) Grass**
15. Which of the following structure / arrangement favours entamophily?
- i) Pollen grain with wings and feathery stigma.
 ii) Colourful petals and nectar secretion.
 iii) A bunch of flowers with less pollen
 iv) Pollen grains with mucous covering
- Ans: ii) Colourful petals and nectar secretion.**
16. Post fertilization, the ovule changes in to a / an _____
- i) seed ii) fruit iii) endosperm iv) perical
- Ans : Seed**
17. Which of the following is correctly matched ?
- i) false fruit – mango ii) multiple fruit – apple
 iii) Aggregate fruit - polyalthia iv) caryopsis – Banana
- Ans: iii) Aggregate fruit - polyalthia**
18. Identity the mismatched pair
- i) legume – dry dehiscent fruit ii) cypsela – dry indehehiscent fruit
 iii) pome - fleshy fruit iv) regma – resembles legume
- Ans: iv) regma – resembles legume**

LESSON – 5

- Select important characteristic features of mammals.
 - Four - chambered heart
 - Fore – limbs and hind limbs.
 - Milk – producing glands
 - Post anal tail

Ans: iii) Milk – producing glands.
- Carnivorous animals use these teeth to tear flesh.
 - incisors
 - Canines
 - premolars
 - molars

Ans: ii)) Canines
- The Henle's loop of nephron is mainly responsible for reabsorption of water in the kidney.

Which of the following has a long loop of Henle in its nephrons to conserve water?

 - Polar bear
 - camel
 - frog
 - whale

Ans : ii) camel
- Which blood cells of mammals are concerned with immunity?
 - young erythrocytes
 - Leucocytes
 - Thrombocytes
 - Matured erythrocytes

Ans : ii) Leucocytes
- You were given two labelled slides with blood smears of an amphibian and a mammal. You would differentiate the blood samples by observing the———
 - colour
 - nature of R.B.C's
 - nature of WBC's
 - contents of plasma

Ans : ii) nature of RBC's
- For the digestion of cellulose, an enzyme called cellulase is required. Some mammals lodge cellulose producing bacteria in their digestive system by offering them food and shelter. These mammals are mostly_____
 - Herbivores
 - carnivores
 - Omnivores
 - sanguivores

Ans: i) Herbivores
- Forelimbs of mammals have a common basic structure or pattern, but are different in their usage / function in different animals. They can be called _____

- i) Homologous organs ii) Analogous organs
iii) vestigial organs iv) Rudimentary organs

Ans: i) Homologous organs

8. Sensitive whiskers are found in _____

- i) Bat ii) Elephant iii) Deer iv) Cat

Ans : iv) Cat

9. The tusks of elephants are modified _____

Ans : incisors

10. Pick out an animal which has four chambered stomach.

- i) Elephant ii) Dolphin iii) Deer iv) Kangaroo

Ans : iii) Deer

11. Normal body temperature of man is _____

- i) 98.4° - 98.6°F ii) 96.6° - 96.8°F
iii) 94.4° - 98.6°F iv) 98.4° - 99.6°F

Ans : i) 98.4° - 98.6°F

12. Mitral valve is found between _____

- i) Right auricle and right ventricle
ii) Left auricle and left ventricle
iii) Right ventricle and pulmonary artery
iv) Left ventricle and aorta

Ans : ii) Left auricle and left ventricle

13. Assertion (A) : Mammalian heart is called myogenic heart

Reason (R) : Heartbeat is regulated by a specialized muscle bundle (pace maker) in mammals.

- i) Both 'A' and 'R' are true but 'R' explains 'A'
ii) Both 'A' and 'R' are true but 'R' doesn't explain 'A'
iii) 'A' is true but 'R' is false. iv) 'A' is false but 'R' is true

Ans : i) Both 'A' and 'R' are true but 'R' explains 'A'

14. One of the following groups contains a non - mammalian animal. Pick up the group.

- i) Dolphin, walrus, porcupine, rabbit, bat

- ii) Elephant, pig, horse, donkey, monkey
- iii) Antelope, deer, cow, buffalo, black buck
- iv) Dog, cat, crocodile, lion, tiger.

Ans : iv) Dog, cat, crocodile, lion, tiger.

15. The epidermis of mammals contains _____
- i) hair, bristles, quills
 - ii) hair, nails, claws
 - iii) hair, bristles, horns
 - iv) hair, nails, scales.

Ans : i) hair, bristles, quills

16. Based on relationship, fill up:

Whale : flippers Bat : _____

Ans : Forelimbs - wings

17. Fill in the blank

RBC : Carrier of oxygen
WBC : _____

Ans : Produce antibodies

18. Based on modifications, make the pairs:

Incisor : tusks of elephant
_____ : quills of porcupine

Ans : hair

LESSON - 6

1. In monotropa the special type of root which absorbs nourishment is the _____

- i) Haustoria
- ii) Mycorrhizal root
- iii) clinging root
- iv) Adventitious root

Ans : ii) Mycorrhizal root

2. The product obtained in the anaerobic respiration of yeast is _____.

- i) Lactic acid
- ii) Pyruvic acid
- iii) Ethanol
- iv) Acetic acid

Ans : iii) Ethanol

3. The roots of a coconut tree are seen growing far from the plant. Such a kind of movement of root for want of water is _____

- i) Phototropism
- ii) Geotropism
- iii) Chemotropism
- iv) Hydrotropism

Ans : iv) Hydrotropism

4. The xylem in the plants is responsible for _____
- i) Transport of water
 - ii) transport of food
 - iii) transport of amino acids
 - iv) transport of oxygen

Ans : i) Transport of water

5. The autotrophic nutrition requires.
- i) CO₂ and water
 - ii) Chlorophyll
 - iii) Sunlight
 - iv) all the above

Ans : iv) all the above

6. Leaf pores / stomata help in _____
- i) in take of CO₂ during photosynthesis
 - ii) Release of O₂ during photosynthesis
 - iii) Release of water vapour during transpiration
 - iv) All of these

Ans : iv) All of these

7. _____ of green plants are called factories of food production.
- i) Mitochondria
 - ii) Chloroplasts
 - iii) Endoplasmic reticulum
 - iv) Nucleus

Ans : ii) Chloroplasts

8. The special root – like structure of plant parasites in cuscuta and viscum are called _____
- i) Rhizoids
 - ii) Haustoria
 - iii) Hyphae
 - iv) Stolons

Ans ; ii) Haustoria

9. Pick out the odd one
- The parts of the alimentary canal are
- i) Pharynx
 - ii) mouth
 - iii) buccal cavity
 - iv) pancreas

Ans : iv) pancreas

LESSON 7

1. Which of the following groups contain only bio – degradable items?
- i) Grass, flowers and leaves.
 - ii) Grass, wood and plastic
 - iii) Fruit peels, cakes and plastic
 - iv) Cake, wood and glass

Ans: i) Grass, flowers and leaves.

2. Which of the following are environmental friendly practices?

- i) Carrying cloth bags for shopping
- ii) Switching of light and fans when not in use
- iii) Using public transport
- iv) all the above

Ans : iv) All the above

3. Which of the following constitutes a food chain?

- i) Grass, wheat, mango
- ii) Grass, goat and human
- iii) Goat, cow and elephant
- iv) Grass, fish and goat.

Ans: ii) Grass, goat and human

4. What is called as 'black gold'?

- i) hydrocarbons
- ii) coal
- iii) petroleum
- iv) ether

Ans : iii) Petroleum

5. Based on the food chain, Pick the odd one out.

Plants → grasshopper → frog → tiger → snake

Ans : Tiger

6. Example for product of green chemistry

- i) plastic
- ii) paper
- iii) bioplastics
- iv) halogen flame retard

Ans : iii) Bioplastics

7. _____ is a green house gas which cause climate change and global warming.

- i) hydrogen
- ii) oxygen
- iii) nitrogen
- iv) carbondioxide

Ans : iv) Carbondioxide

8. The _____ form decomposers in the pond ecosystem

- i) plants
- ii) bacteria
- iii) frogs
- iv) phytoplanktons

Ans : ii) bacteria

9. _____ is used in seeding clouds.

- i) potassium iodide
- ii) calcium carbonate
- iii) Sulphur-dioxide
- iv) ammonium phosphate

Ans : i) potassium iodide

10. An example for fossil fuel is _____
i) copper ii) iron iii) magnesium iv) coal

Ans : iv) coal

11. Air pollution is caused by transport exhaust fumes and emission of gases like SO_2 , CO_2 , NO_2 from industries. Similarly water pollution is caused by _____
i) Sewage ii) crop cultivation iii) rain iv) soil erosion

ans : i) Sewage

12. If wild animals are killed, what difficulty could we face?
i) imbalance in nature ii) decrease in fog rain
iii) decrease in population iv) increase in rain

Ans : i) imbalance in nature

13. Water is an essential commodity for survival. What can we do to increase water resources?
i) deforestation ii) reducing the use of vehicles
iii) the burning of wastage iv) afforestation

Ans : iv) afforestation

14. The tiger and lion are carnivores. Likewise the elephant and the bison are _____

Ans : Herbivores

15. Assertion (A) : Coal and petroleum are called fossil fuels
Reason (R) : Fossil fuels are formed from the remains of dead organisms after millions of years

- i) Both A and R are true and 'R' explains A
ii) Both A and R are true but R doesn't explain A
iii) Only A is true but R is false
iv) A is false but R is true.

Ans : i) Both A and R are true and 'R' explains A

16. Compressed Natural Gas (CNG) is considered as better fuel than coal / petroleum because

Ans : CNG is giving higher heat and not polluted the air

17. Now – a-days water bottles and lunch boxes are made from agricultural products like fruit pulp. These are called _____

Ans : Bio plastics

LESSON - 8

WASTE WATER MANAGEMENT

1. An example of water – borne disease is _____
a) scabies b) dracunculiasis c) trachoma d) typhoid
Ans : d) Typhoid
2. The sedimented and floating materials are removed by this treatment process.
a) Primary treatment b) secondary treatment
c) tertiary treatment d) peripheral treatment
Ans : a) Primary treatment
3. Which is a non renewable resource? (SEP -2014)
a) Coal b) petroleum c) natural gas d) all the above
Ans : d) all the above
4. _____ is the chief component of natural gas (June – 2014)
a) Ethane b) methane c) propane d) butane
Ans : b) methane

Chapter 9

1. A true solution is a homogeneous mixture of solute and solvent. Chalk powder in water is a heterogeneous mixture. Is it a true solution?
Ans : No, it is a suspension.
2. A solution that contains water as the solvent is called an aqueous solution. If carbon disulphide is a solvent in a given solution, then the solution is called ____ (aqueous solution, non – aqueous solution)
Ans : Non – aqueous solution
3. The 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?
Ans : 16gms
4. If two liquids are mutually soluble, they are called _____ liquids. (Miscible, immiscible)
Ans : Miscible

5. When sunlight passes through the window of a classroom, its path is visible. This is due to _____ of light. (reflection, scattering)

Ans : Scattering

6. The particles in various forms are visible only under an ultramicroscope. A solution containing such particles is called _____ (true solution, colloidal solution)

Ans : Colloidal solution

7. The number of components in a binary solution are / is _____ (one, two)

Ans : two

8. The mixture of gases used by deep sea – diver _____ (helium – oxygen, oxygen –nitrogen)

Ans : Helium – Oxygen

9. Soil cannot store more nitrogen than it can hold. Hence soil is said to be in a state of _____ (saturation , non – saturation)

Ans : Saturation.

10. In an endothermic process, solubility increases with _____ in temperature.

Ans: increase

11. Aquatic species are more comfortable in cold water because _____

i) As the temperature decreases, the solubility of dissolved oxygen increases

ii) As the temperature increases, the solubility of dissolved oxygen increases

iii) As the temperature increases, the solubility of dissolved oxygen decrease

Ans: As the temperature decreases, the solubility of dissolved oxygen increases

Chapter - 11



The above reaction is an example of _____

i) combination reaction

ii) double displacement reaction

iii) displacement reaction

iv) decomposition reaction

Ans : Displacement reaction

2. A reddish brown coloured element 'X' on heating in air becomes a black coloured compound 'Y'. 'X' and 'Y' are _____ and _____. (Cu, CuO / Pb, Pbo)

Ans : Cu, CuO

3. A student tests the pH of pure water using a pH paper. It shows green colour. If a pH paper is used after adding lemon juice to water, what colour will be observe?

(Green / red / yellow)

Ans : red

4. Chemical volcano is an example of _____ (combination reaction / decomposition reaction)

Ans : decomposition reaction

5. When crystals of lead nitrate on heating strongly produces _____ gas and colour of the gas is _____

Ans : NO₂, reddish brown

6. When aqueous solution of silver nitrate and sodium chloride are mixed _____ precipitate is immediately formed. (White/yellow/ red)

Ans : White

7. Aluminum can displace Zinc metal from aqueous solution of zinc sulphate because _____

(zinc is more reactive than Aluminum / aluminum is more reactive than zinc)

Ans: Aluminum is more reactive than zinc

8. To protect tooth decay, we are advised to brush our teeth regularly. The nature of tooth paste commonly used is _____ in nature.

Ans : basic

9. Vinegar is present in acetic acid. Curd contains _____ acid (Lactic acid / Tartaric acid)

Ans : Lactic acid

10. $\text{pH} = -\log_{10}[\text{H}^+]$. The pH of a solution containing hydrogen ion concentration of 0.001m solution is _____ (3,11,14)

Ans : 3

Chapter – 12

1. In the modern periodic table, periods and groups are given. Periods and groups indicate _____

i) Rows and columns ii) columns and rows

Ans : Rows and columns

2. The third period contains eight elements. Out of these elements how many elements are non metals? (8 / 5)

Ans : 5

3. An element which is an essential constituent of all organic compounds belongs to the _____ group. (14th group / 15th group)

Ans : 14th group

4. Ore is used for the extraction of metals profitably Bauxite is used to extract aluminum, it can be termed as _____(ore / mineral)

Ans : ore

5. Gold does not occur in the combined form. It does not react with air (or) water. It is in the _____ state. (native / combined)

Ans : native

6. Assertion : A greenish layer appears on copper vessels, is left un cleaned.

Reason : It is due to the formation of a layer of basic copper carbonate.

Give your correct option.

i) Assertion and Reason are correct and relevant to each other.

ii) Assertion is true but reason is not correct

Ans : Assertion and Reason are correct and relevant to each other.

7. A process employed for the concentration of sulphide ore is _____ (froth floatation / gravity separation)

Ans : froth floatation

8. Coating the surface of iron with other metals prevents it from rusting if it is coated with thin layer of zinc it is called _____(galvanization , Painting, Cathodic protection)

Ans : galvanization

9. Any metal mixed with mercury is called amalgam. The amalgam used for dental fitting is _____ (Ag – Sn amalgam, Cu – Sn amalgam)

Ans : Ag – Sn amalgam

10. Vertical columns are called _____

Ans : group

11. Horizontal rows are called _____

Ans : period

12. The second group elements are named as _____ metals.

Ans : alkaline earth

13. An inert gas used in advertisement bulbs is _____

Ans : neon

14. A yellowish shining metal weighed in carats is _____

Ans : Gold

15. The first group elements are called as _____ metals.

Ans : Alkali

16. Group 17 elements are called as _____

Ans : halogen

17. Group 18 elements are called as _____

Ans : noble gases

18. This element belongs to halogen family and helps in thyroid treatment. What is it?

Ans : Iodine

19. The inner transition elements present in 7th period are _____

Ans : Actinides

LESSON – 13

1. 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 ?

Yes, the reason satisfies the assertion.

2. 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 mention above)

Yes, the reason is verified

3. Assertion : Due to catenation a large number of carbon compound are formed.
Reason : Carbon compounds show the property of allotropy.
Does the reason hold good for the given assertion?

No, the reason is not relevant to the assertion.

4. Buckminster fullerene is the allotropic form of _____(Nitrogen / Carbon / Sulphur)

Ans : Carbon

5. Even though it is a non metal, graphite conducts electricity. It is due to the presence of _____(free electrons / bonded electrons)

Ans : free electrons

6. The formula of methane is CH_4 and its succeeding member ethane is expressed as C_2H_6 . The common difference of succession between them is _____(CH_2 / C_2H_2)

Ans : CH_2

7. IUPAC name of the first member of alkyne is _____(ethane / ethyne)

Ans : Ethyne

8. Out of ketonic and aldehydic group, which is the terminal functional group?

Ans : Ketonic group : - Co -

Aldehydic group : - CHO -

9. Acetic acid is heated with Na_2CO_3 in a test tube. A colourless and odorless gas (X) is evolved. The gas turns lime water milky.

Identify X

Ans : X – CO_2 (carbon-di-oxide)

10. Assertion : Denaturation of ethyl alcohol makes it unfit for drinking purpose.

Reason : denaturation of ethyl alcohol is carried out by pyridine.

Check whether the reason is correct for assertion

Ans : yes, the reason is correct for assertion

LESSON - 15

Law of Motion and Gravitation

- The acceleration in a body is due to _____
(balanced force, unbalanced force, electro static force)
Ans : unbalanced force
- The physical quantity which is equal to the rate of change of momentum is -(displacement, acceleration, force, impulse)
Ans : Force
- The momentum of a massive object at rest is _____
a) very large b) very small c) zero d) infinity
Ans : c) Zero
- The weight of a person is 50kg. the weight of that person on the surface of earth will be _____
a) 50N b) 35N c) 380N d) 490N
Ans ; d) 490N
- The freezing of biotechnology product like vaccines require _____freezing systems
a) Helium b) Nitrogen c) Ammonia d) Chlorine
Ans : b) Nitrogen
- The acceleration due to gravity on the surface of the earth will be maximum at_____ and minimum at _____
Ans : the poles, the equator
- If the radius of the earth is reduced to half of its present value, with no change in the mass how will the acceleration due to gravity be affected?
Ans : the acceleration due to gravity increase by 4 times.
- Assertion (A) : Liquefied cryogenic gases are sprayed on electric cables in big cities.

Reason (R) : Liquefied cryogenic gases prevent wastage of power.

- i) A is incorrect and R is correct ii) A is correct and R is incorrect
iii) Both A and R are incorrect iv) A is correct and R support A

Ans : iv) A is correct and R support A

9. From the following statement, choose that which is not applicable to the mass of an object?

- i) It is a fundamental quantity
ii) It is measured using physical balance
iii) It is measured using spring balance

Ans : iii) It is measured using spring balance

10. If liquid hydrogen is for rocket, then ____ is for MRI

Ans : liquid helium

11. List out the names of the organizations which are not associated with Chandrayaan I mission from the following.

- i) ISRO ii) BARC iii) NASA iv) ESA v) WHO vi) ONGC

Ans : ii) BARC, v) WHO vi) ONGC

12. Which principles that are used in rocket propulsion?

Ans: Newton's third Law of motion. Law of conservation of momentum

13. If force = mass x acceleration, then momentum = ?

Ans : mass x velocity

14. As a matter of convention, an anticlockwise moment is taken as _____ and a clockwise moment is taken as _____

Ans : positive, negative

15. Why does a fielder in the game of cricket pull his hands back when he catches a ball?

Ans : to reduce the impact of force.

16. An object is moving with a velocity of 20m/s. A force of 10N is acting in a direction perpendicular to its velocity. What will be the speed of the object after 10 seconds?

Ans : 20m/s

17. The SI unit of momentum is _____
Ans: Kgms⁻¹
18. The value of the universal gravitational constant (G) is _____
Ans : 6.673 x 10⁻¹¹ Nm²kg⁻²
19. The value of acceleration due to gravity (g) is _____
Ans : 9.8ms⁻²
20. _____ was Indian's first unmanned lunar probe.
Ans : Chandrayaan – I

LSESSON -16

ELECTRICITY AND ENERGY

1. The potential difference required to pass a current 0.2A in a wire of resistance 20 ohm is _____
 i) 100V ii) 4V iii) 0.01V iv) 40V
Ans : 4V
2. Two electric bulbs have resistance in the ratio 1:2. If they are joined in series, the energy consumed in these are in the ration _____
 i) 1:2 ii) 2:1 iii) 4:1 iv) 1:1
Ans : 1:2
3. Kilowatt – hour is the unit of _____
 i) potential difference ii) electric power
 iii) electric energy iv) charge
Ans : electric energy
4. _____ surface absorbs more heat than any other surface under identical conditions.
 i) white ii) rough iii) black iv) yellow
Ans : Black
5. The atomic number of natural radioactive element is _____
 i) greater than 82 ii) less than 82
 iii) not defined iv) at least 92
Ans : greater than 82

6. Which one of the following statements does not represent Ohm's law?
- Current / potential difference = constant
 - Potential difference / current = constant
 - Current = resistance x potential difference.
 - Current = resistance x potential difference

Ans : Current / potential difference = constant

Current = resistance x potential difference

7. What is the fuel used in thermal power plants?

Ans : Coal

8. Which is the ultimate source of energy?

Ans : Sun

9. What must be the minimum speed of wind energy by turbines?

Ans : Higher than 15 km /hr

10. What is the main raw material used in the production of bio gas?

Ans : Cow dung.

Lesson -17

Magnetic effect of Electric Current and Light

1. The magnification produced by a mirror is $+ \frac{1}{3}$ then the mirror is a _____ (Concave mirror, Convex mirror, plane mirror)

Ans : Convex mirror

2. The phenomenon of producing an emf in a circuit whenever the magnetic flux linked with the coil change is _____

(electromagnetic induction , inducing currents, inducing voltage, change in current)

Ans: Electromagnetic Induction

3. An electric current through a metallic conductor produces _____ around it. (magnetic field, mechanical force, induced current)

Ans : magnetic field

4. The field of view is maximum for _____

(plane mirror, concave mirror, convex mirror)

Ans : convex mirror

5. An object is placed 25cm from a convex lens whose focal length is 10cm. The image distance is _____
(50cm, 16.66cm, 6.66cm, 10cm)

Ans : 16.66cm

6. From the following statement write down that which is applicable to a commutator.
- a) A galvanometer uses a commutator for dead beat
 - b) A transformer uses a commutator to step up voltage
 - c) A motor uses a commutator to reverse the current

Ans : c) A motor uses a commutator to reverse the current

7. An overhead wire carries current from east to west. Find the direction of the magnetic field 5cm below the wire.

Ans : the direction of the magnetic field is from north to south

8. In the arrangement shown in the figure, there are two coils wound on a non – conducting cylindrical rod. Initially the key is not inserted. Then the key is inserted and later removed. Then which of the following statement is correct?
- a) The deflection in the galvanometer remains zero throughout.
 - b) There is momentary deflection in the galvanometer but it dies out shortly.

Ans : b) There is momentary deflection in the galvanometer but it dies out shortly.

9. Which part of the human eye helps in changing the focal length of the eye lens?

Ans: Ciliary muscles

10. A pencil partly immersed in water in a glass tumbler appears to be bent at the interface of air and water. Name the phenomenon of light responsible for it.

Ans : refraction of light.

11. Sitting in her parlour one night, chitra sees the reflection of her cat in the living room window. If the image of her cat makes an angle of 40° with the normal, at what angle does Chitra see him reflected?

Ans : 40°

Reason : Angle of incidence = Angle of reflection.

12. Why do the lines of the magnetic field not cross each other?
Ans : as the lines of the magnetic field are closed curves they do not cross each other.
13. What is the magnetic field midway between two parallel conductors carrying same amount of current in the same direction and in the opposite direction?
Ans : when the current is in the same direction : magnetic field increases
 When the current is in the opposite direction : magnetic field is zero.
14. How can an AC generator be converted in to a DC generator?
Ans: By changing slip rings into split ring type commutator.
15. Compute the position of the object placed in front of a concave mirror of focal length 'f'. So that the image formed is of the same size of the object
Ans : At C.

TWO MARKS

Unit-1

Heredity and Evolution (2 marks)

- 1) Mendel has observed Tallness as a dominant character in the 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? Calculate the percentage of dominant and recessive characters.

Ans : Dominant character

$$(\text{students can roll their tongue}) = (45/60 \times 100) = 75\%$$

Recessive character

$$(\text{Students cannot roll their tongue}) = (15/60 \times 100) = 25\%$$

The percentage of dominant and recessive characters are=75% and 25%

Ratio=3:1

- 2) The inheritable characters vary in different species and within the same species.

Name the variation in the following cases. The eye colours among the human beings are varied as blue, brown, green etc.

(i) this is called as _____ variation.

The dentition in the rabbit and the elephant are not the same.

(ii) this is called _____ variation.

Ans: (i) Intraspecific

(ii) Intergeneric

- 3) Sexually reproducing organisms produce offspring with marked, significant and visible variation. Asexually reproducing offspring show minor variations.

(i) Do you agree with the above statements?

(ii) Among the following organisms point out the asexually reproducing organism?

(cockroach, Euglena, Earthworm and Bird)

Ans: (i) Yes, the above statements are correct.

(ii) Euglena

- 4) Here are certain important hereditary jargons. Fill in the blanks by choosing a suitable one from the list given.

(Allele, variation, speciation, gene, Allelomorphs)

i) _____ are the factors which form the physical basis of inheritance.

ii) _____ are alternate expression of same gene.

iii) _____ are the expressions of contrasting pair of alleles.

Ans: (i) Genes

(ii) Alleles

(iii) Allelomorphs

- 5) A Change that affects the body cell is not inherited. However, a change in the gamete is inherited. The effects of radiation at Hiroshima have been affecting generations. Analyse the above statements and give your interpretation?

Ans: In Hiroshima, the radiations affected the germ cells of the individuals. This germinal variation is inheritable. So, radiation effects have been affecting generations. It has become a continuous process also.

- 6) Sequentially arrange the different species of man from primitive to modern man

(Neanderthal man, Homo habilis, Homo erectus, Homo sapiens)

Ans: Homo habilis, Homo erectus, Neanderthal man, Homo sapiens.

- 7) Bio-technology, the modern science in biology has helped in producing different types of products. One of the following groups does not have a product of bio-technology.

Pick out and give reasons?

- (i) Enzymes, organic acids, Steroids, Vaccines.
- (ii) Vaccines, Enzymes, Antibiotics, Inorganic acids.
- (iii) Antibiotics, Hormones, Steroids, Vaccines .
- (iv) Steroids, Enzymes, Antibodies, Vaccines.

Ans:(iv) Vaccines, Enzymes, Antibodies, Inorganic acids.

Reasons: Inorganic acids are not produced by biotechnology.

- 8) What do you mean by phenotype and genotype of an individual? Explain?

Ans:

Phenotype:

Expression of morphological characters as tall or dwarf plant is called phenotype.

Genotype:

The expression of gene of an individual for a particular trait is called Genotype.

- 9) What are variations? Mention their type?

Ans: Variation may be defined as differences in the characteristics among the individuals of the same species.

Types of variations:

- (i) Somatic variation.
- (ii) Germinal variation.

- 10) Who proposed the theory of Natural Selection? Mention the two principles of this theory?

Ans:(i) Charles Darwin proposed the theory of Natural Selection.

Principles:

- (i) Natural selection involving struggle for existence and survival of the fittest.

(ii) Variation leads to genetic diversity, which is the staircase of evolution.

11) What are monoclonal antibodies? Mention its use?

Ans: 1.The antibodies produced from cloned cells.

2.They are used in treatment of cancer

12) What is a clone? In What way is the cloning technique useful in the field of veterinary science?

Ans:1) It is an exact carbon copy or copies of a single genetical parent.

2) Valuable animals could be cloned from desirable adult cells.

13) In dogs, the barking trait is dominant over the silent trait, using Punnett square, work out the possible puppies born to two barking parents with genotype(Rr)

Ans:

PUNNET SQUARE

| | | |
|-------|----|----|
| ♀ \ ♂ | R | r |
| R | RR | Rr |
| r | Rr | rr |

RR Rr rr

1 2 1

Barking trait= 3

Silent trait=1

Genotypic Ratio=1:2:1

Phenotypic Ratio=3:1

14) In Dr.Ian Wilmut's cloning experiment, did the new born 'Dolly' resemble the udder cell donor Dorset white sheep or surrogate mother sheep? Give reasons.

Ans: 1.Dolly resembled the udder cell donor .

Reason:

1. The characteristics depends on the DNA of the nucleus.

2. The udder cell nucleus contains diploid number of chromosomes with all the genes.

15) Find the unmatched pairs:

| | |
|------------|-----------------------------------|
| Nif genes | Nitrogen fixation |
| tt | Alleles |
| Bio chips | Biological computer manufacturing |
| Interferon | Anti proteins of Bacteria |
| Stem cells | Unspecialised mass of cells |

Ans: Interferon-Antiproteins of Bacteria.

16) Give the types of Gene therapy

Ans: 1) Somatic gene therapy – The defective gene in somatic cells is replaced. It is not inherited.

2) Germ line gene therapy – Genes in the, egg or sperm is replaced. It is inherited.

17) Match the following by identifying the pair. (Medicines, fuel, Microbes, metabolism, organic acids)

(i) Vaccines (ii) Natural gas (iii) citric acid (iv) Monoclonal antibodies (v) vitamins

Ans:

- (i) Vaccine - Microbes
- (ii) Natural gas - fuel
- (iii) Citric acid - organic acid
- (iv) Monoclonal antibodies - medicines
- (v) Vitamins - metabolism.

18. The excessive use of pesticides has only resulted in the occurrence of more resistant varieties of pests rather than their complete eradication. How can you link this with Darwin's theory of Natural selection and evolution?

Darwin designated them as fittest forms. The selected group of modified individuals will have resistance of the pesticides.

19. i) Why did wilmut select the udder cell?

It had diploid number (2n) of chromosomes with all the genes.

ii) Define the terms haploid and diploid.

Haploid : The cells possess single set of chromosomes.

Diploid : Each species of an organism has a specific number of chromosomes in its somatic cells and are in pair.

20. Mention the dominant and recessive traits observed by Mendel in the garden pea plant with respect to seed and flower.

| a | Seed of garden Pea | Dominant trait | Recessive trait |
|-----|----------------------|----------------|-----------------|
| i) | Seed shape | Round | Wrinkled |
| ii) | Seed colour | Yellow | Green |
| b) | Flower of Garden Pea | | |
| i) | Flower position | Axillary | Terminal |
| ii) | Flower colour | Violet | White |

Lesson-5

Two marks questions

- 1) Mention the two unique characteristics of mammals.
 - i) Epidermal hair
 - ii) Milk producing glands.
- 2) Give two examples each:
 - (i) Ruminating mammals — cow, buffalo.
 - (ii) Marine mammals — Whale, dolphin.
- 3) What type of dentition is seen in mammals?
What are elephant tusks?
 1. Mammals have heterodont dentition with different type of teeth that are highly specialized to match specific eating habits.
(eg) The carnivorous animals have canine teeth to tear flesh.
 2. In elephants, the incisors are modified into tusks
- 4) Mention any four adaptations seen in the camel so that it can live successfully in deserts

1. The skin of the camel is doubly thick.
2. It contains water-storing osmotic cells to conserve water.
3. They have thick bushy eyebrows.
4. Their nostrils can be closed to prevent the entry of sand particles.

5) What is echolocation? Give an example.

By emitting a rapid series of extremely high pitched clicking sounds, and by hearing the echo, the insects found their location.

(eg) The bat captures insects by echolocation.

6) Mention the various valves and their location in the human heart.

1. Tricuspid valve - Right auriculo ventricular aperture.
2. Bicuspid valve - Left auriculo ventricular aperture.
(Mitral valve)
3. Semi – lunar valve - Base of pulmonary artery
4. Aortic valve - Base of aorta.

7) Write any four differences between arteries and veins in mammals.

| | Arteries | Veins |
|---|---|---|
| 1 | Arteries supply oxygenated blood from the heart to different parts of the body. | Veins carry deoxygenated blood to the heart |
| 2 | It carries oxygenated blood | It carries de oxygenated blood |
| 3 | Arteries are thick – walled | Veins are thin walled |
| 4 | The smallest arterial branches are arterioles | The smallest veins are venules |

8) Name the three important blood proteins seen in plasma. Add a note on their functions.

1. Globulin - for immunity
2. Fibrinogen - for blood clotting
3. Albumin - for water balance

9) Which blood cells are without nuclei? What is the advantage of this condition?

Red blood cells.

Advantages : 1. The red blood pigment haemoglobin is present in RBCs.

2. It is used to carry respiratory gases.

10) Name the protein and the blood – cells responsible for the clotting of blood.

- Plasma protein - Fibrinogen
- Blood cells - blood platelets

11) (i) What are the structural and functional units of kidneys?
(Nephron)

(ii) Arrange the organs of the human excretory system in the correct order, based on the passage of urine. (Ureter, Urethra, Kidney, Urinary Bladder)

Ans : Kidney, Ureter, Urinary bladder, Urethra

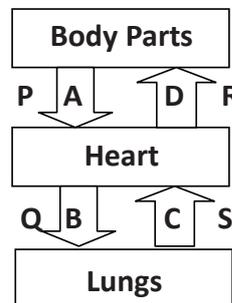
12) Observe the following flow – chart depicting blood circulation in mammals.

Pick out the correct blood vessels A,B,C,D from the following :

(i) pulmonary veins ii) venacava iii) pulmonary artery iv) Aorta

Body Parts

- P A - (ii) Venacava
 Q B - (iii) Pulmonary artery
 R D - (i) Pulmonary veins
 S C - (iv) Aorta



Among the P,Q,R and S samples. Identify the correct match from the following.

- a) P & Q = Oxygenated and R & S = Deoxygenated
- b) P & Q = Deoxygenated and R & S = Oxygenated
- c) All are Oxygenated
- d) All are Deoxygenated

Ans : b) P & Q = Deoxygenated and R & S = Oxygenated

13) Study the following passage:

Most of the vertebrates have jaws with teeth. The mode of arrangement of teeth on the jaws is called dentition.

The various types of teeth seen in mammals are incisors (I), canines (C), premolars(P) and molars(M). They are used for biting, tearing, chewing and grinding respectively. Canines, the tearing teeth are well – developed in carnivores and ill –developed or absent in herbivores.

Now answer the following questions:

i) In frogs, all the teeth in the upper jaw look alike, whereas in human beings they are different. The type of dentition in man can be called _____

- a) Homodont b) Isodont c) Heterodont d) Acrodont

Ans : c) Heterodont

ii) The dental formula of a mammal is written as $ICPM = 2023 / 1023$. The teeth missing in it are _____

- a) Incisors b) canines c) premolars d) molars

Ans : c) Canines

14) Fill up the empty boxes with suitable answers with respect to the valve of mammalian heart.

| Valve (S) | Location | Function |
|-------------------------------------|---|---|
| Bicuspid valve (or) Mitral valve | Between Left auricle and left ventricle | Prevents the backward flow of blood from left ventricle to left auricle |
| Tricuspid Valve | At the right auricular ventricular aperture | Regulates the flow of blood from right auricle to right ventricle. |
| Aortic valve | At the base of Aorta | Regulates the flow of blood from the left ventricle into the aorta. |
| Semilunar valve | At the base of pulmonary artery | Regulates the flow of blood from right ventricle to pulmonary artery. |

15) Any change in the life style, the food habits and the body form of an organism in order to make it comfortable in the environment / habitat, is called adaptation. Identify the suitable adaptation given below against each mammal.

i) Conservation of body heat in large marine mammals like whale (Jaws are modified into baleen plates / Forelimbs are modified into flippers / fat is deposited in subcutaneous tissue)

Ans : Fat is deposited in subcutaneous tissue

ii) Locating food source by bats (forelimbs are modified into wings / hanging upside down using legs / production of sound and detection of the echo)

Ans: Production of sound and detection of the echo.

16) The master chemists of our body are the kidneys. Justify.

- i) Kidneys filter all chemicals in the body.
- ii) Kidneys maintain the chemical composition of blood.
- iii) Kidneys eliminate all chemicals absorbed by the body.
- iv) Kidneys store the chemicals accumulated in the body.

Ans: ii) Kidneys maintain the chemical composition of blood.

LESSON - 6

1) Name the types of vascular tissues in the plant stem which are labelled A & B.

- i) Name A and B
A – Xylem
B – Phloem
- ii) What materials are transported through A?
Water and minerals
- iii) What materials are transported through B?
Food and amino acids
- iv) How do the material in A move upward to the leaves?
1. Root pressure 2. Transpiration

2) What is nutrition? What type of nutrition is seen in green plants and the majority of animals?

Nutrition is the process of obtaining energy through consumption of food.

Green plants - Autotrophic nutrition

Animals - Heterotrophic nutrition

- 3) Match the methods of nutrition of special organs with suitable examples:

| | | |
|-------------|-------------|-----------|
| Autotrophs | Mycorrhiza | Cuscutta |
| Parasites | Cholorphyll | Monotropa |
| Saprophytes | Haustoria | Hibiscus |

Ans :

| | | |
|-------------|-------------|-----------|
| Autotrophs | Chlorophyll | Hibiscus |
| Parasites | Haustoria | Cuscutt |
| Saprophytes | Mycorrhiza | Monotropa |

- 4) Observe the diagram

- i) Mention the type of movements. Shown in Fig A and B

A – Geotropism

B – Phototropism

- ii) How does this movement differ from the movement of mimosa?

| Movement of A & B | Movement of mimosa |
|-----------------------------|--------------------------------|
| 1 Dependent on growth | Independent on growth |
| 2 Slow response to stimulus | Immediate response to stimulus |

- 5) In the process of anaerobic respiration, _____ is a 6 carbon compound which gets converted into _____ carbon compound called lactic acid.

Ans : Glucose, 3 – carbon

- 6) Sugar is converted into alcohol. In the above reaction what kind of process takes place? Which micro - organism is involved?

Ans : Fermentation, yeast

- 7) In human beings, air enters into the body through _____ and moves into _____. In fishes, water enter into the body through _____ and the dissolved oxygen diffuses into _____

Ans : nostrils, lungs, mouth, gills

- 8) Give two examples of root parasites of plants. Mention the special structures present in them to draw the nutrients from the host plant.

Root parasites : Cuscutta, Viscum

Special structure : haustoria

9) What are saprophytes? Give two examples.

Plants which obtain nutrients from non – living organic matter are called saprophytes.

e.g: fungi and bacteria

10) What is the length of the alimentary canal in human beings? List out the parts of the gastro – intestinal tract in the correct sequential order based on the passage of food.

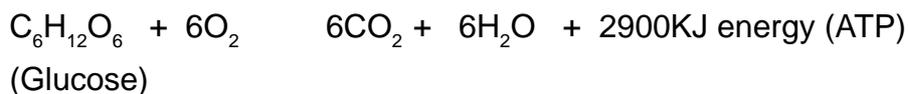
Ans : Length of the alimentary canal in human beings - 9 meters.

Parts of the gastro intestinal tract:

Mouth, buccal cavity, pharynx, oesophagus, stomach, small intestine, large intestine, rectum and anus.

11) What is respiration? Give a balanced equation for aerobic respiration.

Respiration is a process in which the food materials are oxidized and energy is released.



12) A fish taken out of water can't survive a long time, Why?

Fishes take in water through their mouth and force it out through their gills where the dissolved oxygen is absorbed by the blood. So a fish taken out of water can't survive for a long time.

13) What are ammonotelic and ureotelic animals? Give examples.

- The animals which excrete large amount of ammonia are called ammonotelic animals. (e.g) Fishes.
- The animals which excrete urea as the main excretory product are called ureotelic animals. (e.g) mammals

14) Describe the change that occurs in a touch-me-not plant when it is touched?

The folding effect of the touch-me-not plant is caused by the change in the turgidity of the leaflets brought about by the movement of water into and out of the parenchymatous cells of the pulvinus or swollen leaf base.

15) Study the following model with which the transpiration mechanism in plants can be demonstrated.

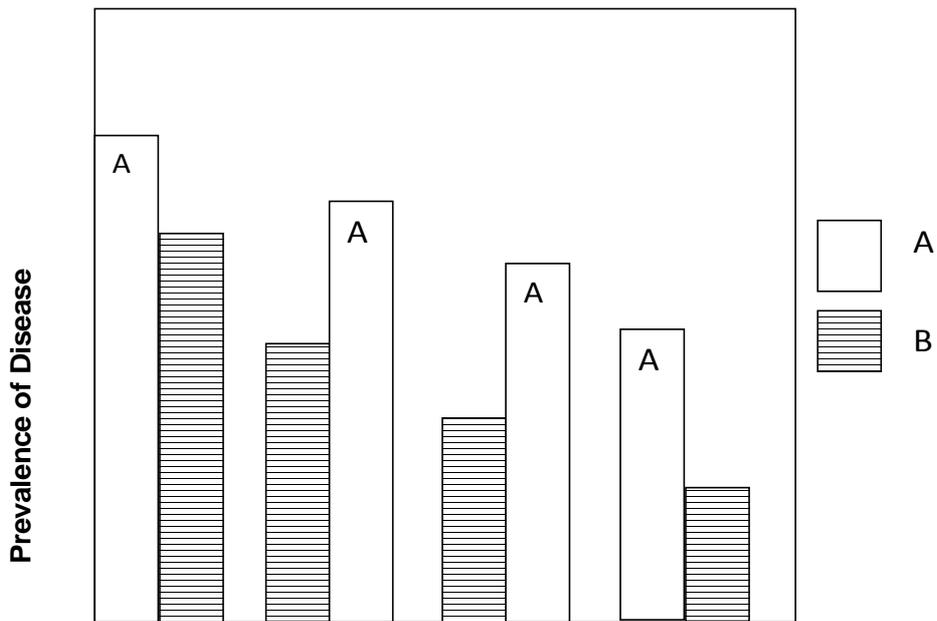
With which structure of the plant do you compare each of the following?

- i) Sponge - Leaves of the plant
- ii) Glass tube filled with water – xylem vessels of stem part.

Chapter - 8

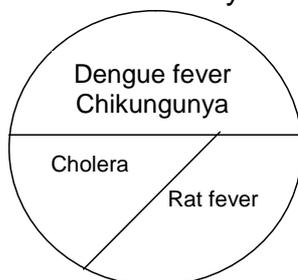
WASTE WATER MANAGEMENT

- 1) The bar – graph indicates the prevalence / widespread attack of infection diseases in two cities A and B. Observe it and answer the question given below.



- a) What may be the reason for the disease in city A?
 Poor hygienic, inadequate quantity and quality of drinking water and lack of sanitation facilities.
- b) Which city needs more effective system of waste – disposal and cleaning?
 City A needs more effective system of waste – disposal and cleaning.
- c) How can the disease be controlled in city A ?
 1. There should be sufficient toilet facilities separately for men and women
 2. Providing adequate sanitation and hygiene facilities.
 3. Clean and reliable water supply in public place.

- 2) The pie diagram represents a survey result of infectious diseases in a village during 2008-2009. Analyse it and answer the following.



- a. Which diseases affect the majority of the population?

Dengue fever, Chikungunya

- b. How are these disease transmitted?

These are transmitted by insect vectors like mosquito which breed in water.

- c. Mention any three measures that can control the other two diseases.

1. Proper hygiene
2. Adequate quantity and quality of drinking water.
3. Proper sanitation facilities

- 3) Match the suitable renewable and non- renewable sources

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

Ans :

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

- 4) Find the odd one out:

- a. Bio – alcohol, green diesel, bio – ethers, petroleum

Ans :Petroleum

- b. Cholera, Typhoid, scabies, dysentery

Ans : Scabies

- 5) A non – renewable resource is natural resource, if it is replaced by natural process at a rate equal to or faster than its rate of consumption by humans.

Read this statement and say whether it is correct or incorrect. If it is incorrect. Give the correct statement.

Ans : Incorrect

A renewable resource is a natural resource if it is replaced by natural process at a rate comparable or faster than its rate of consumption by humans

- 6) Pick out the appliance that can conserve electric energy.

Florescent bulbs, copper choke, solar water heater, electric water heater, tungsten bulbs electronic choke.

Ans : Florescent bulbs solar water heater, electronic choke.

- 7) Observe the picture given below and find out what type of energy is produced

- i) Identify whether this energy is conventional or non conventional.

Ans : Non - conventional

- ii) Draw the given diagram and label it with the parts given below:[battery, battery charger controller, solar incidence, DC load, Battery system]

- iii) In the given picture _____ energy is transformed into _____energy.

Ans : Solar energy to electrical energy.

- 8) i) What type of energy is produced in this picture?

Ans : Electrical energy from wind energy.

- ii) What difficulties do we face in harnessing this energy? Explain.

Ans: a) uneven nature of wind throughout the year.

b) cost of establishment is high

c) it required a large area of land of establishment.

- iii) Why do we say that this energy is better than solar energy and atomic energy?

Ans : a) It needs a low level of maintenance

b) it does not pollute the atmosphere.

9) Fossil fuel are formed by decomposition of bio – mass buried under the earth over millions of year ago.

i) Name any three fossil fuels.

Ans : Coal, Petroleum, Natural gas

ii) Which fuel is used in the production of fertilizer?

Ans : Natural gas

iii) What is natural gas made up of ?

Ans: More than 90% of methane with traces of ethane and propane.

10) Wind power is generated from uneven heating of the earth's surface by the sun and the hot core.

i) Which country is called the country of winds?

Ans : Denmark

ii) Which country leads the world in harnessing wind energy?

Ans : Germany

iii) In which district of Tamilnadu do we have wind energy farm?

Ans : Kanyakumari

iv) In which of the following land forms will you be able to harness maximum amount of wind energy? [Plains, canals, Valleys]

Ans : Plains

11) Match the following

| Water borne diseases | Water related diseases | Water based disease |
|-----------------------------|-------------------------------|----------------------------|
| Typhoid | Dengue | Scabies |
| Malaria | Amoebiasis | Cholera |
| Filariasis | Lice | Trachoma |

Ans :

| Water borne diseases | Water related diseases | Water based disease |
|-----------------------------|-------------------------------|----------------------------|
| Typhoid | Malaria | Lice |
| Amoebiasis | Filariasis | Scabies |
| Cholera | Dengue | Trachoma |

12) Water contaminated by human beings, chemical or industrial wastes can cause a variety of communicable disease through ingestion of physical contact.

i) Name any two diseases caused by polluted water?

Ans : Typhoid, cholera

ii) Why do we drink boiled water?

Ans : To prevent water borne diseases.

iii) How can you reuse waste water in your houses?

Ans : a) By watering yards and gardens

b) By filtering septic systems.

c) by irrigating fields

13) Water, a precious physical substance, is essential to all living organisms.

i) Which is the largest water resource?

Ans ; Sea

ii) What are the various sources of water?

Ans: Rain, ground water, artesian well, rivers

iii) Which is the primary source of water?

Ans : Rain

iv) What are the way by which you can raise the ground water level in your house?

Ans: a) rain water harvesting

b) household waste water recycling.

14) An energy audit is an inspection, survey an analysis of energy flow to ensure energy conservation in a building, process or system.

i) How will you measure consumption of electrical energy at home?

Ans : By recording the energy efficiency using the technological equipments for a period of a year.

ii) What are the benefits of implementing this method in your school?

Ans : Benefits of implementing in schools

a) Money can be saved

b) It will be available to fund important school projects

c) It will reduce resource use and environmental pollution,

15) We should manage the waste water in order to prevent water pollution and its harmful effects.

i) What are the ways by which water gets contaminated?

Ans : Water gets contaminated by sewage disposal, industrial and agricultural waste

ii) How will you control water contamination in your house?

a) proper hygiene

b) adequate quantity and quality of drinking water and

c) proper sanitation facilities.

Chapter - 9

1) From the table given below, furnish your point of inference:

| Substance | Solubility at 25° C |
|-----------|---------------------|
|-----------|---------------------|

| | |
|------|-----|
| NaCl | 36g |
|------|-----|

| | |
|------|-----|
| NaBr | 95g |
|------|-----|

| | |
|-----|------|
| NaI | 184g |
|-----|------|

Ans : i) The above given salts form saturated solution

ii) The nature of the solute affects the solubility.

2) Distinguish between the saturated and unsaturated solution at a temperature of 25°C using the data given below. (Note: solubility of NaCl is 36g)

i) 16g NaCl in 100g water

ii) 36g NaCl in 100g water

Ans :

| i) Saturated Solution | ii) Unsaturated solution |
|--|--|
| 1. The amount of solute dissolved is equivalent to the solubility. | 1. The amount of solute dissolved less than the solubility |
| 2. Addition of solute is not possible | 2. Addition of solute is possible |
| 3. E.g. 36g of NaCl in 100g water | 3. E.g. 16g of NaCl in 100g water |

3) Differentiate true solution and colloidal solution.

| | |
|---------------------|--------------------|
| Ans : True solution | Colloidal solution |
| 1. Homogeneous | 1. Hetrogeneous |
| 2. Diffuses rapidly | 2. Diffuses slowly |

4) You have prepared a saturated solution of sugar at room temperature. Is it possible to dissolve some more grams of sugar to this solution? Justify your answer.

Ans : 1) It is not possible
2) Some more sugar can be dissolved only if the temperature is raised

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

Ans :
$$\text{weight percent} = \frac{\text{Weight of the solute}}{\text{Weight of solute} + \text{Weight of solvent}} \times 100$$
$$= \frac{20}{20 + 50} \times 100$$
$$= 28.57\%$$

6) Valli took some common salt, naphthalene balls, camphor, baking soda and washing soda. She attempted to dissolve these substances either in water or in acetone, complete the table with the expected results.

Ans:

| S.No | Substance | Medium which it is soluble | Reason |
|------|-------------------|----------------------------|------------------|
| a) | Common salt | Water | Ionic compound |
| b) | Naphthalene balls | Acetone | Organic compound |
| c) | Camphor | Acetone | Organic compound |
| d) | Baking soda | Water | Ionic compound |
| e) | Washing soda | Water | Ionic compound |

7) i) Which gas is dissolved in soft drink?

Ans : CO₂ (Carbon –di- oxide)

ii) What will you do to increase the solubility of this gas?

Ans : By increasing the pressure (or) we have to increase the pressure

8) Beaker 'A' has sugar mixed with water and beaker 'B' has vitamin 'C' dissolved in water.

(i) Which solution will scatter light?

Ans : The solution in Beaker 'B'

(ii) In which beaker does the Brownian movement take place?

Ans : Beaker B

(iii) Name the type of solution that beaker A and beaker B contain.

Ans: Beaker A - True solution

Beaker B - Colloidal solution

(iv) Which of the two solution is homogeneous?

Ans: Solution A

(v) Identify the beaker that has particles of size 10°A to 2000°A

Ans : Beaker B

9) Name the type of solution formed in the following cases.

Ans: 1) 20g of NaCl in 100g of water - unsaturated solution

2) 36g of NaCl in 100g of water - saturated solution

3) 45g of NaCl in 100g of water at 80°c - super saturated solution

4) Sulphur dissolved in CS_2 - Non aqueous solution

5) Nitrogen in Soil - Saturated solution

10) Give the dispersed phase and the dispersion medium in each of the following

a) Cheese b) soda water c) smoke

Ans: The given Dispersed phase Dispersion medium

a) Cheese Liquid Solid

b) Soda water gas Liquid

c) Smoke Solid Gas

11) Radha prepared a solution which could be separated by filtration.

i) Name the type of solution

Ans : Suspension

ii) Is the solution transparent or opaque?

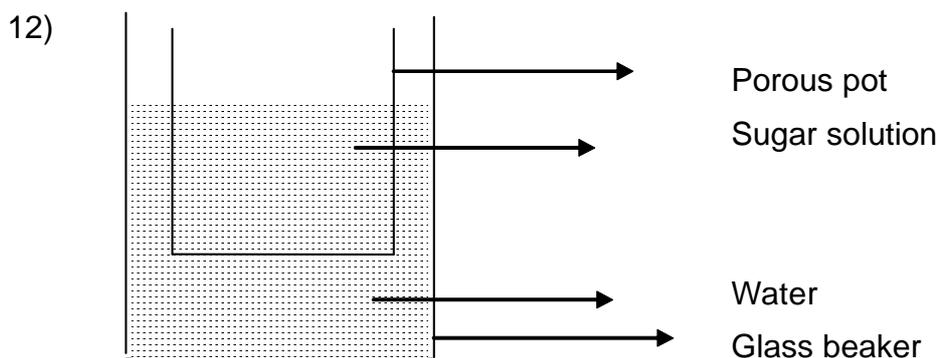
Ans : Opaque

iii) Mention the nature of the solution.

Ans : Hetrogeneous solution

iv) Mention the size of the solute particle.

Ans : More than 2000\AA



In the above case, Sekar observed that the water turned sweeter after some time.

Explain the reason for the same.

Ans : The particles of sugar solution are too small and easily diffuses through the pore.

So the water becomes sweeter.

13) Beaker A has chalk powder mixed with water and beaker B has protein dissolved in water.

i) Which solution shows Brownian Movement?

Ans : Solution B

ii) Identify the solution that has particle size greater than 2000\AA

Ans : Solution A

iii) Which beaker contains colloidal solution?

Ans : Beaker B

iv) Mention the size of the particles present in beaker B

Ans : 10\AA - 2000\AA

- v) Say whether colloidal solution is homogeneous or heterogeneous?

Ans : Hetrogeneous

14) Justify the following statements with an explanation.

- i) Solubility of calcium oxide decreases with increase in temperatures.

Ans: it is an exothermic reaction.

- ii) What happens to the solubility in exothermic process with regard to temperature?

Ans : the solubility will decreases.

- iii) In endothermic process solubility increases with increase in temperature.

Ans : The solubility of KNO_3 increases with increase in temperature.

- iv) At a given temperature increase in pressure increases the solubility of the gas.

Ans : Mass of gas dissolved and pressure are directly proportional. (Henry's Law).

Chapter - 12

- 1) Assertion : In thermite welding, aluminium powder and Fe_2O_3 are used.

Reason : Aluminium powder is a strong reducing agent.

Does the reason satisfy the assertion?

Ans : Yes

- 2) Can the rusting of iron nails occur in distilled water? Justify your answer.

Ans : Yes, distilled water contains air and water.

- 3) Iron reacts with con.HCl and con. H_2SO_4 . But it doesn't react with con. HNO_3 . Justify your answer with proper reasons.

Ans : Iron becomes chemically inert due to the formation of Iron oxide.

- 4) To design the body of an aircraft, aluminium alloys are used. Give reasons.

Ans : 1) Light

2) High tensile strength

3) Corrosion resistant.

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

Ans : X = Aluminium (Al)

Y = Aluminium oxide (Al_2O_3)

6) Give a single term for each of the following.

i) The process of extracting ore's from the earth's crust.

Ans : Mining

ii) The rocky impurities associated with the ores.

Ans : Gangue.

iii) The substance added to the ore to reduce fusion temperature.

Ans : Flux

iv) The process of reducing the roasted oxide ore to metal under molten condition.

Ans : Smelting.

v) Noble metals occur in this state.

Ans : Free state (or) Native State.

7) Connect the following metallurgical steps with the extraction of metals in the correct order.

(Roasting, bessemerisation, Hall's process, smelting(reduction), Bayer's process, electrolytic refining, blast furnace, calcinations, gravity separation, froth floatation process)

| Metal | Step 1 | Step 2 | Step 3 | Step 4 | Step 5 |
|-------|--------------------|----------------------|----------------------|-----------------|-----------------------|
| Al | Bayer's process | Hall process | - | - | - |
| Cu | Froth Floatation | Roasting | Smelting (reduction) | Bessemerisation | Electrolytic refining |
| Fe | Gravity separation | Roasting calcination | Smelting (reduction) | Blast furnace | - |

8) Relate all the four columns of the table with unique properties.

| Metal | Ore | Chemical Formula | Reduction |
|--------------|---------------|---|------------------|
| Al | Haemetite | Pbs | Blast furnace |
| Cu | Bauxite | Fe_2O_3 | Bessemerisation |
| Fe | Copper pyrite | $\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$ | Froth floatation |
| Pb | Galena | CuFeS_2 | Hall's process |

Ans :

| Metal | Ore | Chemical Formula | Reduction |
|--------------|---------------|---|-------------------|
| Al | Haemetite | Pbs | Hall's Process |
| Cu | Bauxite | Fe_2O_3 | Bessemerisation |
| Fe | Copper pyrite | $\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$ | Blast furance |
| Pb | Galena | CuFeS_2 | Froth floatations |

9) Here are a few statements related to alloys. Identify the incorrect ones and correct them.

- i) It is a homogeneous mixture of metals
- ii) Zinc amalgam is used in dental filling
- iii) Duralumin is used for making statues, coins, bells and gongs.
- iv) Alloys are produced by compressing finely divided metals one over the other.
- v) Zinc is the solvent of brass.

Ans : (ii), (iii) & (v) are incorrect

Corrections :

- (ii) Tin amalgam is used in dental filling.
- (iii) Bronze is used for making statues, coins, bells and gongs.
- (vi) Copper is the solvent of brass.

10) Complete the following table .

| Zone | Temperature | Chemical process |
|-----------------|-------------|--|
| Combustion Zone | - | - |
| - | - | $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$ |
| - | 400°C | - |

Ans :

| Zone | Temperature | Chemical process |
|---------------------|-------------|--|
| Combustion Zone | 1500°C | $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$ |
| Fusion Zone | 1000°C | $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$ |
| Reduction Zone | 400°C | $\text{CaO} + \text{SiO}_3 \rightarrow \text{CaSiO}_3$ $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$ |
| 11) Guess Who I am? | | |

i) I am a cheap metal but highly reactive. Therefore I Sacrifice myself to save objects mad of Iron.

Ans ; Magnesium (Mg)

ii) I am a solid solution. Dentists use me to fill cavities

Ans : Ag – Sn amalgam

iii) I am a constituent of blood pigment. When I am less in quantity, the person is anaemic.

Ans : Iron (Fe)

iv) I am formed when matrix and flux react.

Ans : Slag

12) Answer the following questions in one or two sentences.

1. What is the percentage of gold present in “Hallmark Gold”

Ans : 91.6%

2. What is the meaning of ‘Chalcogens’?

Ans : Ore forming

3. What are the metals used in manufacture of science equipment?

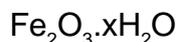
Ans : Al, Mg, Cu

4. Name the metal present in Chlorophyll which is used in photosynthesis?

Ans : Mg

5. When iron is exposed to moist air, a reddish brown substance is deposited on it. What is it ? Give its composition.

Ans : Rust – Hydrated ferric oxide



13) Match the following

| Type of Iron | Percentage of Carbon | Uses |
|--------------|----------------------|--|
| Steel | 2 – 4.5% | Making man hole covers and drain pipes |
| Wrought iron | 0.25 - 2% | Construction of building and machinery |
| Pig iron | < 0.25% | Making electromagnets |

Ans :

| Type of Iron | Percentage of Carbon | Uses |
|--------------|----------------------|--|
| Steel | 0.25 - 2% | Making man hole covers and drain pipes |
| Wrought iron | < 0.25% | Construction of building and machinery |
| Pig iron | 2 – 4.5% | Making electromagnets |

Lesson-2 (5 Marks)

1) Kala has delivered a baby

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

Ans:(i)Immunisation schedule

| Age | Vaccine | Dosage |
|-----------------------|-------------|----------------------|
| New born baby | BCG | 1 st dose |
| 15 days | Oral polio | 1 st dose |
| 6 th week | DPT & polio | 1 st dose |
| 10 th week | DPT & polio | 2 nd dose |
| 14 th week | DPT & polio | 3 rd dose |

(i) Tuberculosis, polio, Diphtheria, pertussis, Tetanus.

2) There is a wide-spread out break of malaria in your area.

- (i) Suggest some controlling measures to the local authorities concerned.
- (ii) Pick out the right symptom for malaria (chills, shivering and a rise in temperature diarrhoea)

Ans: i) 1.Sanitary measures include ground fogging with disinfectants.
2.Prevent water stagnation and cover ditches and drains.
3. Use mosquito nets and repellants

ii) Chills, shivering, and a rise in temperature.

3) 15th October is observed as 'Handwashing Day'

- i) Tell your friend the effects of hand washing.
- ii) How frequently do you wash your hands everyday and when?

Ans: (i) It is a good habit. It keeps your hand free from dust, micro organisms and toxic substances.

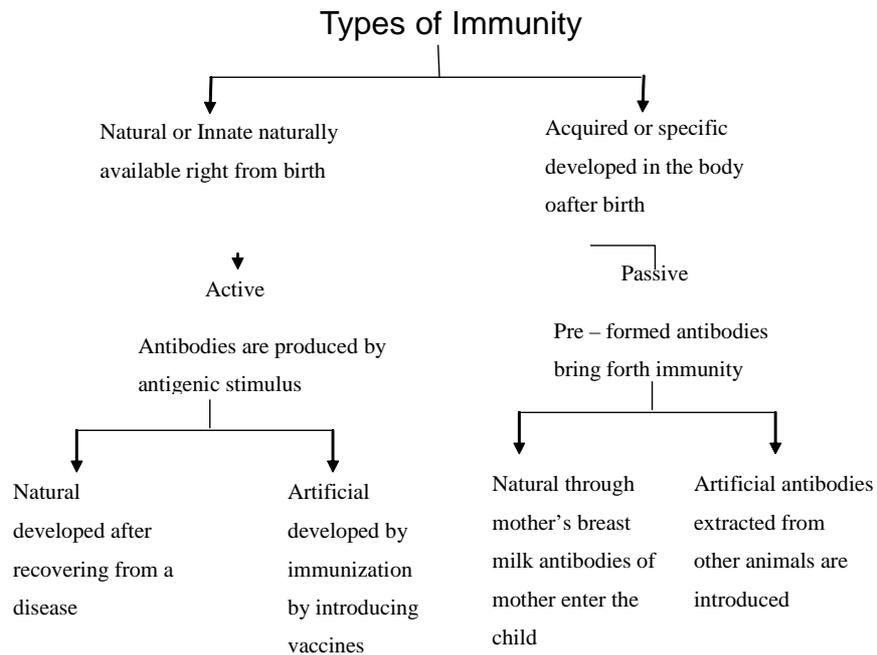
(ii) I wash my hands-

- 1. before and after each meal.
- 2. After using toilet
- 3. after disposing the used sanitary products
- 4. While sneezing.
- 5. after playing.

4) What is Immunity? Write a note on the various type of Immunity?

Ans Immunity

It is the body's defence against or the specific resistance exhibited towards infectious organisms



- 5) Describe the life cycle of plasmodium
- i) Plasmodium is responsible for malaria.
 - ii) The vector is female Anopheles mosquito
 - iii) The sexual stage takes place in female Anopholes mosquito
 - iv) Asexual occurs in Man
 - v) In the body of a mosquito the parasite forms sporozoites.
 - vi) When these mosquitoes bite a healthy person the sporozoites introduced into his body
 - vii) The sporozoites multiply within the liver cells and enter in to the red blood cells.
 - viii) This result in the release of haemozoin which is responsible for the chill and high fever.
- 6) List out the various disease caused to due to nutritional deficiency. Add a note on their sympton.
- Ans : Caused by protein deficiency
- a) Marasmus : Symptoms – child loses weight and suffers diarrhoea. It will appears as though bones are covered by skin
 - b) Kwashiorkar : Symptoms – child develops an enlarged belly with swelling in face and feet.

Diseases caused by Vitamin deficiency

| Vitamin | Deficiency disease | Symptoms |
|-------------------------|--------------------|--------------------------------------|
| Vitamin A | Nictalopia | Night blindness |
| Vitamin D | Rickets | Defective calcification of Bones |
| Vitamin E | Sterility | Inability to reproduce |
| Vitamin K | Hamemorrhage | Profuse loss of blood |
| Vitamin B ₁ | Beri Beri | Nervous disorder |
| Vitamin B ₂ | Pellagra | Dementia, diarrhoea |
| Vitamin B ₁₂ | Pernicious anaemia | Distraction of RBC |
| Vitamin C | Scurvy | Bleeding gums and loosening of teeth |
| | | |

UNIT 7

1) a) classify the following substances:

wood, paper, plastic and grass

- Bio – degradable substances wood, paper and grass
- Non – biodegradable substances plastic

b) Give a detail account of your classification

- Wood paper and grasses are broken down by biological biological decay. So they are bio – degradable.
- Plastic cannot be broken down by biological decay. So it is non – bio degradable.

2) In your locality people are affected due to water scarcity. What measures will you take to deal with the problem of water scarcity.

i) Seeding clouds:

If water laden clouds are present seeding clouds with dry ice or potassium iodide particles sometimes can initiate rain.

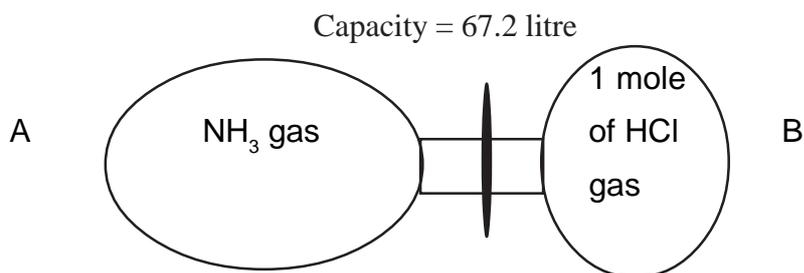
ii) Desalination :

If it is coastal area this method, can be used. In desalination, the common methods of evaporation and re-condensation are involved.

- iii) Water shed management:
The management of rainfall and resultant run off water is saved by building small dams is called watershed management.
- iv) Rain water harvesting :
Rain water harvesting means collecting rain water from the roof of building or courtyards and storing it in the the underground for later use.
- v) Wetland conservation :
It preserves natural water storage and acts as aquifer recharge zones.
- 3) We are surrounded by smoke. Is this situation good for our health?
Give reason
No, this situation is not good for our health.
- i) Smoke contains a lot of dust and chemical substances produced by burning of fuels, emission form vehicles etc.
- ii) Inhaling air with smoke is harmful to lungs.
- iii) It causes respiratory problems.
- iv) Smoke contains small particles can be carried over long distance by wind and settle on ground or water.
- 4) List out the harmful effects of coal burning.
Environmental effects of coal burning.
- i) Sulphur particles present in the coal will cause acid rain,
- ii) Interference with ground water and water false levels.
- iii) Contamination of land and water ways.
- iv) Dust nuisance
- v) Release of CO_2 , green house gas, which causes climate change and global warming.

10 - ATOMS AND MOLECULES

- 1) When ammonia reacts with Hydrogen chloride gas, it produces white fumes of ammonium chloride. The volume occupied by NH_3 in glass bulb A is three times more than volume occupied by HCl in glass bulb B at STP.



- i) How many moles of ammonia are present in glass bulb A?
- ii) How many grams of NH₄Cl will be formed when the stopper is opened? (Atomic mass of N= 14, H= 1, Cl = 35.5)
- iii) Which gas will remain after completion of the reaction?
- iv) Write the chemical reaction involved in this process.

Answer :

- i) 3 moles (22.4lit = 1mole, 67.2 lit = 3moles)
 - ii) 53.5grams [NH₄Cl] = N + 4(H) + 1 (Cl)

$$= 14 + 4 (1) + 1 (35.5)$$

$$= 53.5$$
 - iii) 2 moles of Ammonia remains after the completion of the reaction
 - iv) $\text{NH}_3 + \text{HCl} \longrightarrow \text{NH}_4\text{Cl}$
- 2) Nitro glycerine is used as an explosive. The equation for the explosive reaction is $\text{C}_3\text{H}_5(\text{NO}_3)_3 \longrightarrow 12\text{CO}_2 + 10\text{H}_2\text{O} + 6\text{N}_2 + \text{O}_2$
 (Atomic mass of C = 12, H = 1, N = 14, O = 16)
- i) How many moles does the equation show for
 a) Nitro glycerine, b) gas molecules produced.
 - ii) How many moles of gas molecules are obtained from 1mole of nitro glycerine?
 - iii) What is the mass of 1mole of nitro glycerine?

Answers :

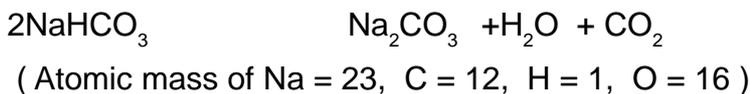
- i) Nitro glycerine = 1 mole
 Gas molecules = 19 moles
- ii) 1 mole of Nitro glycerine produces 19 mole of gas molecules.
 Gas molecules

$$\begin{array}{rcl}
 \text{CO}_2 & = & 12 \\
 \text{N}_2 & = & 6 \\
 \text{O}_2 & = & 1 \\
 & & \hline
 & & 19
 \end{array}$$

iii) Mass of 1 mole of Nitro glycerine is 227grams.

$$\begin{aligned}
 & \text{C}_3\text{H}_5(\text{NO}_3)_3 \\
 & = 3(\text{C}) + 5(\text{H}) + 3(\text{N}) + 9(\text{O}) \\
 & = 3 \times 12 + 5(1) + 3 \times 14 + 9 \times 16 \\
 & = 36 + 5 + 42 + 144 \\
 & = 227 \text{ grams.}
 \end{aligned}$$

3) Sodium bi carbonate breaks down on heating



- How many moles of sodium bi carbonate are there in equation?
- What is the mass of sodium bi carbonate?
- How many moles of carbon di oxide are there in equation?

Answers

| Number of moles of NaHCO ₃ | Mass of NaHCO ₃ in this equation | Number of moles of CO ₂ |
|---------------------------------------|---|------------------------------------|
| 2 moles | 2 x 84 = 168 gram | 1 mole |

4) 100g of Calcium was extracted from 174g of calcium oxide.

(Atomic mass of Ca = 40, O = 16)

- What mass of oxygen is there in 174g of calcium oxide?
- How many moles of oxygen atom are there in this?
- How many moles of calcium atoms are there in 100g of calcium?
- What mass of calcium will be obtained from 1000g of calcium oxide?

Answers:

$$\begin{aligned}
 \text{i) mass of calcium oxide} & = 174 \text{ grams} \\
 \text{mass of calcium} & = 100 \text{ grams} \\
 \text{mass of oxygen} & = 174 - 100 \\
 & = 74 \text{ grams}
 \end{aligned}$$

$$\begin{aligned} \text{ii) Number of moles of Oxygen} &= \frac{\text{mass}}{\text{Atomic mass}} \\ &= \frac{74}{16} = 4.625 \text{ moles} \end{aligned}$$

$$\begin{aligned} \text{iii) Number of moles of calcium} &= \frac{\text{mass}}{\text{atomic mass}} \\ \text{atoms inn 100g of calcium} &= \frac{100}{40} = 2.5 \text{ moles} \end{aligned}$$

$$\begin{aligned} \text{iv) Mass of calcium obtained} &= \frac{100 \times 1000}{174} \\ \text{From 1000g of calcium oxide} &= 574.7 \text{ grams} \end{aligned}$$

5) How many grams are there in the following?

- i) 1 mole of chlorine molecule, Cl_2
- ii) 4 moles of ozone molecules, O_3
- iii) 2 moles of sulphur molecules, S_8
- iv) 2 moles of Nitrogen molecules, N_2

Answer :

| Name of the molecules | Number of moles | Grams | Calculation |
|-----------------------|-----------------|----------------------|---|
| Cl_2 | 1 | $1 \times 71 = 71$ | $2 \times \text{Cl}$ $2 \times 35.5 = 71$ |
| O_3 | 4 | $4 \times 48 = 192$ | $3 (\text{O}) \times 4$ $3 \times 16 \times 4 = 192$ |
| S_8 | 2 | $2 \times 256 = 512$ | $8 (\text{S}) \times 2$ $8 \times 32 \times 2 = 512$ |
| N_2 | 2 | $2 \times 28 = 56$ | $2 (\text{N}) \times 2$ $2 \times 14 \times 2 = 56$ |

6) Find how many moles of atoms are there in

- i) 2g of Nitrogen
- ii) 23g of Sodium
- iii) 40g of Calcium
- iv) 1.4g of Lithium
- v) 32g of Sulphur

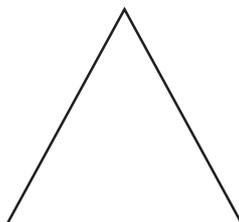
Answer :

| Element | mass (grams) | Atomic mass (grams) | Number of moles of the atoms = mass / atomic mass |
|----------|--------------|---------------------|---|
| Nitrogen | 2 | 14 | $2 / 14 = 0.14$ moles |
| Sodium | 23 | 23 | $23 / 23 = 1$ mole |
| Calcium | 40 | 40 | $40 / 40 = 1$ mole |
| Lithium | 1.4 | 7 | $1.4 / 7 = 0.2$ mole |
| Sulphur | 32 | 32 | $32/32 = 1$ mole |

Lesson 17

Magnetic effect of Electric current and Light

1) Draw the given diagram and label the following in the diagram.



Ans :

- i) Incident ray - PE
- ii) Refracted ray - EF
- iii) Emergent ray - FS
- iv) Angle of refraction - r
- v) Angle of deviation - D
- vi) Angle of emergence - e

- b) The refractive index of diamond is 2.42 what is the meaning of this statement in relation to speed of this statement in relation to speed of light?

Ans :

Refractive index $\mu = C / V$

$$= 2.42 \quad C = 3 \times 10^8 \text{ ms}^{-1}$$

$$\begin{aligned} \text{Velocity of light in diamond } V &= C / \mu \\ &= 3 \times 10^8 \text{ ms}^{-1} / 2.42 \end{aligned}$$

$$V = 1.23 \times 10^8 \text{ ms}^{-1}$$

The speed of light in diamond is less than the speed of light in air



- a) Redraw the above diagram
 b) This diagram represent _____

Ans : A.C generator

- c) Label the parts of the diagram.

Ans :

| | | |
|------------|---|------------------|
| S_1, S_2 | - | Slips rings |
| B_1, B_2 | - | Carbon Brushes |
| NS | - | poles of magnets |
| ABCD | - | Armature |
| R | - | Resistor |

- d) Mention the principle used in the device denoted by this diagram

Ans : Electromagnetic induction.

3)

- i) Find the nature, position and magnification of the image formed by a convex lens of focal length 10cm, If the object is placed at a distance of (a) 15cm b) 8cm

- ii) Which of the above represent the use of convex lens in (a) A film projector
(b) the magnifying glass used by palm reader.

Ans :

- a) If the object is placed at a distance of 15cm.

Position of the Image : Beyond 2F

Nature of : Real and inverted

Magnification : $m = v/u$ $u = -15\text{cm}$ & $f = 10\text{cm}$

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

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

$$1/v = 1/f + 1/u$$

$$1/v = 1/10 + 1/-15$$

$$1/v = 1/10 - 1/15$$

$$\frac{1}{v} = \frac{3 - 2}{30} = \frac{1}{30}$$

$$= 1/30$$

$$v = 30\text{cm}$$

$$\text{Magnification } m = v/u = 30/-15$$

$$= -2.$$

- b) If the object is placed at a distance of 8cm.

Position of the Image : on the same side of the lens

Nature : virtual and erect

Magnification : $m = v/u$ $u = -8\text{cm}$ $f = 10\text{cm}$ $V = ?$

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

$$1/v = 1/f + 1/u$$

$$\frac{1}{v} = \frac{1}{10} - \frac{1}{8}$$

$$1/v = 4-5/40$$

$$= -1/40$$

$$v = -40\text{cm}$$

Magnification $m = v/u$

$$= -40/-8$$

$$= 5$$

- iii) A) A film projector - object is at 15cm
 b) the magnifying glass used by palm reader - object is at 8cm

4) An object of 5cm tall is placed at a distance of 10cm from a concave mirror of radius of curvature 30cm

- i) Find the nature, position and size of the image:
 ii) Draw the ray diagram to represent the above case.

Ans :

Height $h = 5\text{cm}$, Radius of curvature $(R) = 30\text{cm}$

Distance of the object $= -10\text{ cm}$

Radius of curvature $= 2 \times \text{focal length}$

$$30 = 2f$$

$$F = 30 / 2$$

$$F = 15\text{cm}$$

By Mirror formula

$$1/f = 1/v + 1/u$$

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

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

$$1/v = 2 + 3 / 30$$

$$= 5/30$$

$$v = 30/5 = 6\text{cm}$$

- i) Position : Between P and F behind the mirror
 Nature : Virtual and erect
 Size : Diminished

ii) 

5) The optical prescription of a pair of spectacle is

Right eye $= - 3.5\text{D}$ Left eye : $- 4.00\text{D}$

- i) Name the defect of the eye
- ii) Are these lenses thinner at the middle (or) at the edges?
- iii) Which lens has a greater focal length?

Ans :

- i) Myopia (near – sightedness)
- ii) Myopia Concave lens thinner at the middle
- iii) Right eye : - 3.50D

$$\begin{aligned}P &= 1/f \\-3.5 &= 1/f \\F &= 1 / -3.5 \\&= - 0.28\end{aligned}$$

Left eye : - 4.00 D

$$\begin{aligned}P &= 1/f \\-4.00 &= 1/f \\F &= 1 / -4 \\&= - 0.25\end{aligned}$$

Hence, the right eye lens has a greater focal length