

General Science

1. Which of the following instruments is used for measuring the relative density of liquids based on the concept of buoyancy?

- A. Hygrometer
- B. Hydrometer
- C. Lactometer
- D. Barometer

Ans. B

Sol.

- Hygrometer – It is used to measure the humidity of the air.
- Hydrometer – It is used to measure the relative density of liquids based on the concept of buoyancy.
- Lactometer – It is used to check the purity of milk by measuring its density.
- Barometer – It is used to measure air pressure in a certain environment.

2. Which of the following instrument is used to measure humidity?

- A. Anemometer
- B. Hygrometer
- C. Thermometer
- D. Pyrheliometer

Ans. B

Sol.

- A **hygrometer** is an instrument used for measuring the moisture content in the atmosphere.
- These devices measure the water vapour of the atmosphere
- These devices use a material that attracts moisture & that material changes depending on hydration.

3. Digestive enzyme is not secreted by which of the following ?

- A. Liver
- B. Pancreas
- C. Salivary Gland
- D. Small Intestine

Ans. A

Sol.

- Liver does not secrete any digestive enzymes.
- Digestive enzymes are secreted by the pancreas, stomach, and small intestine and Salivary Gland.

• The four main digestive enzymes are :

- 1) Lipases
- 2) Proteases
- 3) Amylases
- 4) Nucleases

4. Which of the following substance is not digested by human body?

- A. Sugar
- B. Fats
- C. Starch
- D. Cellulose

Ans. D

Sol.

Cellulose serves as roughage and is helpful in the smooth functioning of bowel (stool) movement. Rice, sisal, corn are some examples of Cellulose rich foods.

Some functions of roughage are

- it helps in bowel movement
- it cleans our digestive tracts and protects us from digestive ailments.
- it prevents constipation.
- it helps in retaining water in the body.
- it helps in maintaining optimum levels of blood sugar and cholesterol.

5. Which of the following is the process of producing or developing fruits without the process of pollination and fertilization?

- A. Parthenogenesis
- B. Parthenocarpy
- C. Apogamy
- D. Syngamy

Ans. B

Sol.

Parthenocarpy is the process of producing or developing fruits without the process of pollination and fertilization. Parthenocarpy occasionally occurs as a mutation in nature; if it affects every flower the plant can no longer sexually reproduce but might be able to

propagate by apomixes or by vegetative means. There are two types of Parthenocarpy - natural and artificial.

6. Monocotyledons and dicotyledons are subdivision of which of following?

- A. Gymnosperm
- B. Angiosperm
- C. Thallophyta
- D. Pteridophyta

Ans. B

Sol.

* Monocotyledons and dicotyledons are subdivision of **Angiosperm**.

* Angiosperms are vascular plants and they are called flowering plants.

* The dicots have two cotyledons in their seeds and the monocots have one cotyledon.

7. Algae and fungi are subdivision of which of following?

- A. Gymnosperm
- B. Bryophyta
- C. Thallophyta
- D. Pteridophyta

Ans. C

Sol.

* Algae and fungi are subdivision of **Thallophyta**.

* Thallophytes are defined by having undifferentiated bodies.

* Algae are aquatic and capable of conducting photosynthesis, while fungi are heterotrophic non vascular plants and cannot conduct photosynthesis.

8. Who discovered X-Ray?

- A. Wilhelm Rontgen
- B. William Lee
- C. X Rollswick
- D. I Thompson

Ans. A

Sol.

- **Wilhelm Conrad Rontgen** discovered X-rays.
- Rontgen's discovery occurred accidentally when he was testing whether cathode rays could pass through glass when he noticed a glow coming from a nearby chemically coated screen.

- He dubbed the rays that caused this glow X-rays because of their unknown nature. X-rays are electromagnetic energy waves that act similarly to light rays but at wavelengths approximately 1,000 times shorter than those of light.

9. Which of the following is a characteristic of Sound wave?

- A. These are Longitudinal waves.
- B. It's speed depend upon medium.
- C. They are produced by vibrations.
- D. All of above

Ans. D

Sol.

- * Sound wave is Longitudinal Waves.
- * It's speed is maximum in solid and less in liquid and minimum in air.
- * It is generated by a source; the sound source creates vibrations in the surrounding medium. Humans can only hear sound waves as distinct pitches when the frequency lies between about 20 Hz and 20 kHz.

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11. Bernoulli's Principle is based on the principle of conservation of

- A. Mass
- B. Energy
- C. Momentum
- D. Work

E. None of the Above/ More than of the above

Ans. B

Sol.

- **Bernoulli's Principle is based on the principle of conservation of energy.**
- This principle is **an idea of fluid dynamics.**
- It states that in a steady flow, **the sum of all forms of energy in a fluid along a streamline is the same at all points on that streamline.**

12. Which law states that the force required in extending or compressing a spring by some distance is directly proportional to the distance extended or compressed?

- A. Kepler's Law
- B. Hooke's Law
- C. Snell's Law
- D. Henry's Law

Ans. B

Sol.

- Hooke's Law states that- that the force needed to extend or compress a spring by some distance is proportional to that distance.
- The law is named after 17th century British physicist **Robert Hooke.**
- Mathematically it is expressed as, **$F=kx$,**
Where, F is force, k is constant and x is distance
- **Hooke's Law** also applies to anything from inflating a balloon and pulling on a rubber band to measuring the amount of wind force is needed to make a tall building bend and sway.
- Hooke's law is the first classical example of an explanation of elasticity.

13. What are the dimensions of coefficient of viscosity?

- A. $[ML^{-1} T^{-1}]$
- B. $[MLT^2]$
- C. $[M^2LT^2]$
- D. $[M^2L^2T^2]$

Ans. A

Sol. • Coefficient of viscosity is the tangential force that is needed to maintain a unit velocity gradient between two parallel liquid layers of unit area

• So, Coefficient of viscosity (η) = Fr/Av , where F =Tangential force, A =area, r =distance between liquid layers, v =velocity

• Dimensions of Force = MLT^{-2}

Dimensions of Area = L^2

Dimensions of distance = L

Dimensions of velocity = LT^{-1}

→ $\eta = [MLT^{-2}][L]/[L^2][LT^{-1}]$

→ $\eta = [ML^{-1}T^{-1}]$

14. Naphthalene balls are made up of _____.

- A. Carbon
- B. Wood
- C. Coal Tar
- D. Coal Gas.

Ans. C

Sol.

- Naphthalene balls are made from **coal tar**.
- It is used as an insecticide and pest repellent.
- They were used to **repel moths and cockroaches** and as deodorants for urinals and bathrooms.
- The chemical formula of naphthalene is $C_{10}H_8$.

15. Compressed natural gas mainly consists of which gas?

- A. Methane
- B. Butane
- C. Isobutane
- D. Ethane
- E. None of the above/More than one of the above

Ans. A

Sol. The natural gas compressed at very **high pressure** is called compressed natural gas (**CNG**). It consists mainly of **methane (95%)**. The other **5%** is made of various gases, such as ethane, propane, and butane including a small amount of other gases, such as N_2 , CO_2 , H_2S , water vapour, etc.

16. Baking soda is

- A. Sodium bicarbonate
- B. Sodium carbonate
- C. Sodium hydroxide
- D. Sodium sulphate

Ans. A

Sol. Sodium bicarbonate or sodium hydrogen carbonate is called baking soda.

17. Which organelle of cell produces ATP molecule?

- A. Golgi Bodies
- B. Mitochondria
- C. Lysosomes
- D. Cell Membrane

Ans. B

Sol.

Mitochondria produce energy-rich molecule adenosine triphosphate (ATP).

- That's why it is called as **Energy house of cell**.
- ATP of Adenosine Triphosphate is also known as **Energy currency** of body.
- The mitochondrion is different from most other organelles because it has its own circular DNA and reproduces independently of the cell in which it is found.

18. Which of these connective tissues connects muscle to bone?

- A. Nervous tissue
- B. Tendon
- C. Ligament
- D. All of the above

Ans. B

Sol. • Tendons are a band of fibrous connective tissue which connect muscle to bone.

- Tendons are made up of collagen and they are capable of withstanding tension.

19.

The name of the longest muscle in human body is.....

- A. Sartorius muscle
- B. Massete muscle
- C. Stapedius muscle
- D. None of these

Ans. A

Sol.

- The Sartorius muscle is the longest muscle in the human body.
- It is a long, thin, superficial muscle that runs down the length of the thigh in the anterior compartment. Its upper portion forms the lateral border of the femoral triangle.

20. Which gland controls the functioning of other endocrine glands?

- A. Thyroid Gland
- B. Pineal Gland
- C. Adrenal glands
- D. Pituitary gland

Ans. D

Sol.

- Pituitary glands control the functioning of other endocrine glands.
- There are different types of glands about the size of rice or pea and the pancreas is the largest gland in the body.
- Pituitary gland controls functions of the gland such as the thyroid gland, adrenal glands, ovaries and testicles.
- It is suited at the base of the brain.
- The chemicals released by endocrine glands coordinate your body's functions, from metabolism to growth and development, emotions, mood, sexual function and even sleep.

21. Which disease's last phase is lockjaw?

- A. Diabetes
- B. Cancer
- C. Tetanus
- D. Malaria

Ans. C

Sol.

- Tetanus is commonly known as "lockjaw."
- It is contracted through a cut or wound that becomes contaminated with tetanus bacteria.
- Tetanus is a serious disease caused by a bacterial toxin that affects nervous system, leading to painful muscle contractions, particularly jaw and neck muscles.

22. **Nyctalopia is caused by deficiency of the following vitamin?**

- A. Vitamin A
- B. Vitamin B₁
- C. Vitamin C
- D. Vitamin D

Ans. A

Sol. **Night blindness**, also called **nyctalopia**, failure of the eye to adapt promptly from light to darkness that is characterized by a reduced ability to see in dim light or at night. It occurs as a symptom of numerous congenital and inherited retinal diseases or as a result of vitamin A deficiency.

23. Which is the smallest angiosperm known?

- A. Neottia.
- B. Striga.
- C. Eucalyptus
- D. Wolffia

Ans. D

Sol.

Wolffia commonly known as duckweeds are the smallest flowering plant on earth. They are commonly found floating on water having free-floating thalli, green or yellow-green, and without roots.

24. Which of the following is known as fruit sugar ?

- A. Fructose
- B. Sucrose
- C. Maltose
- D. Lactose

Ans. A

Sol. Fructose i.e it is also known as fruit sugar , it is present in ripe grapes and honey.

25. Pleura membrane covers which part of the body?

- A. Kidneys
- B. Lungs
- C. Stomach

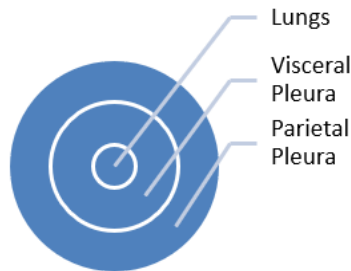
D. Liver

Ans. B

Sol.

• **Pleura cover the surface of the lungs.**

- Pleurae are serous membranes that separate the lungs and the wall of the thoracic cavity.
- The visceral pleura cover each lung surface and the parietal pleura cover the inner surface of the thoracic cavity.



A) The inner layer (visceral pleura) wraps around the lungs and is stuck so tightly to the lungs that it cannot be peeled off.

B) The outer layer (parietal pleura) lines the inside of the chest wall.

26. Rh factor is named after

- A. Monkey
- B. Drosophila
- C. Rat
- D. Man

Ans. A

Sol.

* The Rh antigen similar to one present in Rhesus monkeys (hence known as Rh), is also observed on the surface of RBCs of majority (nearly 80 per cent) of humans.

* Such individuals are called Rh positive and those in whom this antigen is absent are called Rh negative.

27. Which of the following is not an accessory gland in Male reproductive system ?

- A. Prostate Gland
- B. Seminal Vesicle
- C. Bartholin Gland
- D. Cowper's Gland

Ans. C

Sol.

- **Bartholin gland is not an accessory gland in Male reproductive system.**
- The Bartholin's glands are **located on each side of the vaginal opening in women.**
- **Prostate Gland, Seminal Vesicle and Cowper's Gland are accessory glands in Male reproductive system.**

28. Pulmonary Artery carries _____.

- A. Oxygenated blood from lungs
- B. Deoxygenated blood from lungs
- C. Oxygenated blood to lungs
- D. Deoxygenated blood to lungs

Ans. D

Sol.

- A pulmonary artery is an artery that **carries deoxygenated blood** to the lungs.
- The largest pulmonary artery is the main pulmonary artery from the heart.
- The smallest ones are the arterioles, which lead to the capillaries that surround the pulmonary alveoli.

29. Which of the following takes part in secondary growth of the plants?

- A. Apical meristem
- B. Lateral meristem
- C. Intercalary meristem
- D. All of these

Ans. B

Sol.

30. What is the unit of Refractive index?

- A. Metre per sec
- B. Radian
- C. Ohm
- D. None of these

Ans. D

Sol.

- **Refractive Index is a dimensionless number.**

- **Because it is defined as how fast light travels through a material i.e $RF = c/v$** , where c is the speed of light in vacuum and v is the phase velocity of light in the medium. Hence the ratio c/v comes out to be dimensionless.
- The refractive index of water is 1.33, which also means that light travels 1.333 times as fast in vacuum as in water.
- Basically Refractive Index gives an idea of how light is bent, refracted when it is passed through a medium.

31. The impression of an image persists on the retina for about _____ of a second.

- A. 1/10th
- B. 1/8th
- C. 1/16th
- D. 1/5th

Ans. C

Sol.

- The impression of an image persists on the retina for about **1/16th** of a second. 'Persistence of Vision' is the theory where the human eye has the illusion of an after picture still persisting.
- It is when our eye has the capacity to persist for 1/16 of a second after the picture has been removed.

32. Hologram uses light _____ to produce an image.

- A. Refraction
- B. Diffraction
- C. Diffusion
- D. Total Internal Reflection

Ans. B

Sol.

* **Holograph uses light diffraction to produce an image.**

* Hologram is a photographic recording of a light field.

* Holography requires the use of laser light for illuminating the subject and for viewing the finished hologram.

33. Kepler's law of planetary motion states that the square of the time period is proportional to the

- A. semi-major axis
- B. square of the semi-major axis
- C. cube of the semi-major axis
- D. fourth power of the semi major axis

Ans. C

Sol. Kepler's laws of planetary motion are three scientific laws describing the motion of planets around the Sun.

1. The orbit of a planet is an ellipse with the Sun at one of the two foci.
2. A line segment joining a planet and the Sun sweeps out equal areas during equal intervals of time.
3. **The square of the orbital period of a planet is proportional to the cube of the semi-major axis of its orbit.**

The answer to the question lies in the third law of Kepler.

34. The work done by a centripetal force on an object moving in a circle at constant speed is _____.

- A. equal to the force exerted
- B. equal to the force exerted multiplied by the displacement
- C. zero
- D. None of the above

Ans. C

Sol.

The centripetal force acting on an object is always perpendicular to the circle and therefore, the work done will be zero.

35. Newton's second law of motion

- A. is also called as law of conservation of momentum.
- B. is also called as law of inertia
- C. describes the relationship between the forces on two interacting objects.
- D. explains about change in momentum.

Ans. D

Sol.

- **Newton's second** law of motion explains about change in momentum.
- **Newton's 2nd law** states that the acceleration of an object depends upon two variables are following:-

- o The net force acting on the object
- o The mass of the object.
- The three laws of Newton are as follows-
 - o **First law of motion-**
 - An object will not change its motion unless a force acts on it.
 - o **Second law of motion-**
 - The force on an object is equal to its mass times its acceleration.
 - o **Third law of motion-**
 - When two objects interact, they apply forces to each other of equal magnitude and opposite direction.

36. Mercury thermometer can be used to measure temperature upto :

- A. $260^{\circ}C$
- B. $100^{\circ}C$
- C. $357^{\circ}C$
- D. $500^{\circ}C$

Ans. C

Sol.

Mercury thermometer is used to measure the temperature from 30 degree Celsius to 357 degree Celsius. In a "mercury thermometer", mercury is filled in a glass tube and a 'standard temperature scale' is marked on the tube. A mercury thermometer helps to check the temperature and the variations.

37. The fundamental particle neutrino has charge

- A. 0
- B. +1
- C. +2
- D. -1

Ans. A

Sol. A neutrino is a subatomic particle that is very similar to an electron but has no electrical charge and a very small mass, which might even be zero.

Neutrinos are one of the fundamental particles which make up the universe.

These are only particle other than gravitational waves that can zip through the universe at speeds very close to that of light.

38. Which of the following material has highest thermal conductivity?

- A. Silver
- B. Copper
- C. Diamond
- D. Gold

Ans. C

Sol. $K_{\text{silver}} = 405 \text{ W/mK}$

$K_{\text{copper}} = 385 \text{ W/mK}$

$K_{\text{diamond}} = 2300 \text{ W/mK}$

$K_{\text{gold}} = 319 \text{ W/mk}$

So, the correct option is (c).

39. Which one of the following is example of a heterogeneous mixture?

- A. Concrete
- B. Soda
- C. Ice cubes in cola
- D. All of the above

Ans. D

Sol.

- * All of the above are examples of a heterogeneous mixture.
- * **A heterogeneous mixture is a mixture of two or more [chemical substances](#).**
- * Concrete is a heterogeneous mixture of aggregate, cement, and water.
- * Soda contains water, sugar, and carbon dioxide, which forms bubbles. While the sugar, water, and flavorings may form a chemical solution, the carbon dioxide bubbles are not uniformly distributed throughout the liquid.

40. Which of the following polymer is formed by co polymerisation of phenol and formaldehyde?

- A. Toulene
- B. Nylon
- C. Bakelite
- D. Styrene

Ans. C

Sol.

- * **Bakelite** polymer is formed by co polymerisation of phenol and formaldehyde.
- * It is a thermosetting phenol formaldehyde **resin polymer**.
- * It is widely used as molding compound, an adhesive or binding agent, a varnish, and a protective coating.
- * Bakelite was also particularly suitable for the emerging electrical and automobile industries because of its extraordinarily high resistance

41. Who among the following gave the 'Law of Octaves'?

- A. Lavoisier
- B. Mendeleev
- C. Newlands
- D. Dobereiner

Ans. C

Sol.

- **Law of Octaves was given by Newlands.**
- According to this law if the chemical elements are arranged according to increasing atomic weight, those with similar physical and chemical properties occur after each interval of seven elements.
- He proposed this law in 1865.

42. Computed Tomography (CT Scan) uses which rays to visualise internal structure of human body?

- A. X rays
- B. Gamma Rays
- C. Radio Isotopes
- D. Magnetic Resonance

Ans. D

Sol. • Computed Tomography (CT Scan) **uses magnetic resonance** rays to visualise internal structure of human body.

- Computed tomography (CT) is a non-invasive medical examination or procedure that uses specialized x-ray equipment to produce cross-sectional images of the body.

43. _____ is the living substance of the cell surrounding the cell membrane, nucleus, and cytoplasm.

- A. Nucleoplasm

- B. Protoplasm
- C. Chromoplasm
- D. Chloroplasm

Ans. B

Sol.

Protoplasm is the living substance of the cell surrounding the cell membrane, nucleus, and cytoplasm.

- Protoplasm generally contains
 - a) **Cytoplasm** – the fluid found outside the nuclear membrane.
 - b) **Nucleoplasm**- the fluid found inside the nuclear membrane.
- Protoplasm is thick, translucent fluid composed of lipids, carbohydrates, inorganic salts, and nucleic acids.

44. Adipose tissues are the example of:

- A. Dense connective tissue
- B. Specialised connective tissue
- C. Loose connective tissue
- D. Epithelium tissue

Ans. C

Sol. Connective tissues are classified into three types namely Loose connective tissue, Dense connective tissue, and Specialised connective tissue

- **Loose Connective tissue:** Cells and fibres are loosely organised in a semi-fluid ground substance in loose connective tissue, for example, areolar tissue and **adipose tissue**.
- **Dense connective tissue:** The dense connective tissues are densely packed with fibres and fibroblasts. Dense regular and dense irregular tissues are defined by the way fibres are oriented in a regular or irregular pattern. For example, tendons and ligaments
- **Specialised connective tissue: It includes** cartilage, bones and blood

45. In which type of the nervous system, intermediate neurons are found?

- A. Superior Nervous system
- B. Central Nervous system
- C. Peripheral Nervous system
- D. Inferior Nervous system
- E. None of the above/More than one of the above

Ans. B

Sol.

Interneurons connect the spinal motor and sensory neurons in brain regions. They are found exclusively in the central nervous system i.e. in the brain and spinal cord. They act as the “middlemen” between sensory and motor neurons, as they convert external stimuli to internal stimuli and control muscle movement, respectively.

46. Which hormone is also known as growth hormone?

- A. Thyroid stimulating Hormone
- B. Somatotrophic Hormone
- C. Gonadotropin Hormone
- D. Antidiuretic Hormone
- E. None of the above/More than one of the above

Ans. B

Sol.

- STH (Somatotrophic Hormone) is also known as growth hormone.
- It stimulates growth, cell regeneration and cell reproduction.
- GH (Growth Hormone) also stimulates the production of IGF – 1 and increases the concentration of glucose and free fatty acids.

47. Diseases are broadly grouped into infectious and non-infectious diseases. In the list given below, identify the infectious diseases.

- i. Cancer
- ii. Influenza
- iii. Allergy
- iv. Small pox

- A. i and ii
- B. ii and iii
- C. iii and iv
- D. ii and iv

Ans. D

Sol.

- Cancer is non-infectious and causes maximum death in the world.
- Small pox is infectious and caused by a virus. It is totally eradicated.
- Influenza is infectious and can be transmitted from one person to another.

- Allergy is a condition in which the immune system reacts abnormally to a foreign substance.

48. Which of the following vitamins is also called beauty vitamin?

- A. Vitamin A
- B. Vitamin E
- C. Vitamin D
- D. Vitamin B

Ans. B

Sol.

Vitamin E is responsible for the growth of hair, colour, tone, etc. Hence, it is called beauty vitamin. The sources of vitamin E are wheat germ oil, sunflower seeds, almonds, spinach, avocados, squash, kiwifruit, trout, shrimp, olive oil and broccoli.

49. Which is the largest phylum of animal kingdom?

- A. Chordata
- B. Arthropoda
- C. Annelida
- D. Porifera

Ans. B

Sol.

Arthropoda is the largest phylum with 80% of all known living animals. Animals with jointed appendages (in Greek Arthron: jointed, poda: legs). The body has three segments/regions as head, thorax and abdomen. Body is covered by an exoskeleton made up of chitin. For example- Prawn, Housefly, Cockroach.

50. Trypsin enzyme is helpful in which action?

- A. Digestion of carbohydrate
- B. Digestion of fat
- C. Digestion of nucleic acid
- D. Digestion of protein

Ans. D

Sol.

Trypsin is an enzyme which helps in digestion of protein. It is present in small intestine.

Trypsin is produced by pancreas in an inactive form called trypsinogen. Digestion of

carbohydrates starts in the mouth with salivary amylase. Lipase enzyme breaks down fats and fatty acids into glycerol.

51. Respiration is the type of which of the following reaction?

- A. Junction reaction
- B. Decomposition reaction
- C. Exothermic reaction
- D. Endothermic reaction

Ans. C

Sol.

- Statement C is correct as respiration is the exothermic process.

Reaction in which heat is realised along with the formation of the product is called an exothermic chemical reaction. As we all know, we need the energy to stay alive. During digestion, food is broken down into simpler substances. Example rice potato has contained carbohydrates. These carbohydrates are broken down to form glucose. This glucose combines with oxygen in the cell of our body and provide energy.

52. Blood protein which initiates blood coagulation is

- A. Prothrombin
- B. Thrombin
- C. Fibrinogen
- D. Fibrin

Ans. A

Sol.

- * Prothrombin is the protein that initiates blood clotting.
- * Prothrombin converted into thrombin in the presence of thromboplastin.
- * Thrombin converts fibrinogen into fibrin that causes blood clotting.
- * Calcium ions and vitamin K are also required in the formation of clot.

53. Function of obturator on micropyle is

- A. Obstructs the path.
- B. Directs the growth of pollen tube
- C. Helps in fusion
- D. Dissolves the wall of pollen tube.

Ans. B

Sol. Any ovular structure associated with directing the growth of pollen tube toward the micropyle is generally referred to as obturator.

54. The nitrogenous waste of Human Beings is

- A. Ammonia
- B. Urea
- C. Ammonium Nitrate
- D. Uric Acid

Ans. B

Sol. Nitrogenous waste of Human Beings is Urea

Urea is a colourless, odourless solid, highly soluble in water, and practically non-toxic.

Mammals convert the ammonia into the urea which is finally excreted as the urea.

55. What is the dividing tissue in plants known as?

- A. Meristematic tissue
- B. Simple permanent tissue
- C. Complex permanent tissue
- D. Epithelial tissue

Ans. A

Sol.

- The dividing tissue in plants is known as Meristematic tissue.
- Meristematic cells give rise to various organs of a plant and are responsible for growth.
- It contains undifferentiated cells.
- They are commonly known as meristems.

56. A lemon kept in water in a glass tumbler appears to be bigger than its actual size when viewed from the sides. This happens because of which phenomenon?

- A. Total internal reflection
- B. Refraction of light
- C. Dispersion
- D. Reflection of light

Ans. B

Sol.

* **Refraction of light:** When light travels from one transparent medium to another, the direction of propagation of light in the second medium changes. This phenomenon is known as the refraction of light.

* Some other examples of refraction of light :

- 1) bottom of a tank containing water appears to be raised.
- 2) letters appear raised when viewed through a glass slab.
- 3) pencil partially immersed in water appears to be bent.

* Reflection of light: it is the process of sending back the light rays which fall on the surface of an object.

57. What is myopia?

- A. Inability to see distant objects clearly
- B. Abnormal functioning of the thyroid gland
- C. It is a condition of enlargement of heart
- D. It is a kidney disorder

Ans. A

Sol.

- Myopia is a progressive visual disorder that results in **poor distance vision**. If the myopia is severe, it will impair near vision as well.
- Myopia is also known as "near-sighted" or "short-sighted." In addition to weakening vision, it also changes the physical structure of the eye.

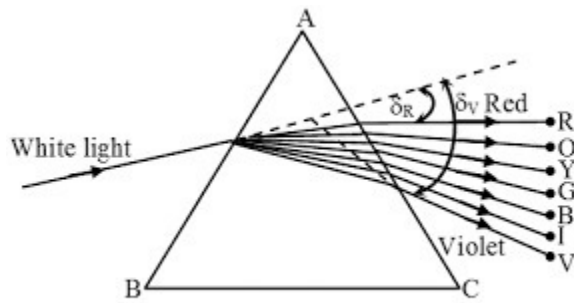
58. Which one of the following processes explains the splitting of a beam of white light into its constituent colours?

- A. Dispersion
- B. Reflection
- C. Diffraction
- D. Polarization

Ans. A

Sol.

Colours are often seen as light passes through a triangular prism. When passing through a prism, white light is separated into its constituent colours - Red, Orange, Yellow, Green, Blue and Purple. The separation of visible light in its various colours is known as **Dispersion**.



Dispersion of white light by a glass prism

Reflection is the ratio of reflected power to incident power, usually expressed in decibels or percentages. Most real objects have some mixture of diffuse and specular properties, and surface reflectance is often divided into diffuse and specular reflection. In climatology, reflection is called **Albedo**. Hence, the correct answer is **A**

59. If the earth stops rotating, the apparent value of g on its surface will

- A. increase at some places and remain the same at poles
- B. increase everywhere
- C. decrease everywhere
- D. remain the same everywhere

Ans. A

Sol. If the earth stops rotating, the apparent value of g on its surface will increase at all places except poles because the outward centrifugal forces have been removed. And the shape of earth will change from oblate spheroid to sphere with a new radius.

60. Match the following different machines and their principle of working.

- (i) Electric motor - (a) Heat energy into mechanical energy
- (ii) Steam engine - (b) Electric energy to light energy
- (iii) Dynamo - (c) Electrical energy to mechanical energy
- (iv) Electric Bulb - (d) Mechanical energy into electrical energy

- A. (i-d, ii-a, iii-c, iv-b)
- B. (i-c, ii-d, iii-a, iv-b)
- C. (i-c, ii-a, iii-d, iv-b)
- D. (i-b, ii-d, iii-a, iv-c)

Ans. C

Sol.

- Electric motor - Electrical energy to mechanical energy
- Steam engine - Heat energy into mechanical energy

- Dynamo - Mechanical energy into electrical energy
- Electric Bulb - Electric energy into light energy
- Generator - Mechanical energy into electrical energy
- Fuel cells - Chemical Energy into Electric Energy
- Windmills - Wind energy into Mechanical energy

Therefore, the correct answer is option C.

61. Which of the following is not a type of inertia?

- A. Inertia of rest
- B. Inertia of direction
- C. Inertia of momentum
- D. Inertia of motion

Ans. C

Sol. Inertia is of three types:

1. Inertia of rest
2. Inertia of direction
3. Inertia of motion

62. Pitch of sound depends on which feature of sound?

- A. Intensity of sound
- B. Frequency of sound
- C. Quality of sound
- D. Amplitude
- E. None of the above/More than one of the above

Ans. B

Sol. Pitch of sound depends upon frequency of sound.

63. Which of these will turn red litmus blue?

- A. Lemon water
- B. Baking soda solution
- C. Vinegar
- D. Hydrochloric Acid

Ans. B

Sol. • Red litmus paper turns blue with **basic/alkaline solution**

- Baking soda solution/sodium bicarbonate is alkaline as its pH value is above 7.

64. Which of the following is simplest hydrocarbon?

- A. Butane
- B. Methane
- C. Ethane
- D. Propane

Ans. B

Sol. Methane is the simplest hydrocarbon, and it has one carbon atom and 4 hydrogen atom having a single bond.

65. Which particle is directly related to Bose-Einstein Condensate?

- A. Boson
- B. Electron
- C. Proton
- D. Neutron

Ans. A

Sol.

- In **1924-25**, Satyendra Nath Bos and Albert Einstein gave the information about Bose-Einstein condensate.
- This state was first predicted by **Albert Einstein** following a paper written by **Satyendra Nath Bose**.
- It is a state of matter of a dilute gas of low densities called bosons cooled to temperatures very close to absolute zero ($-273.15\text{ }^{\circ}\text{C}$).
- The first gaseous condensate was produced by **Eric Cornell and Carl Wieman** on 5th June 1995.

66. _____ fibre melt on heating?

- A. Nylon
- B. Cotton
- C. Jute
- D. None of the above

Ans. A

Sol. Synthetic fibres melt on heating. So, if the clothes catch fire, it can be disastrous. The fabric melts and sticks to the body of the person wearing it.

We should, therefore, not wear synthetic clothes while working in in the kitchen or in a laboratory

67. SI unit of magnetic flux is

- A. Weber- m^2
- B. Weber

C. $\frac{\text{Weber}}{m}$

D. $\frac{\text{Weber}}{m^2}$

Ans. B

Sol. **Magnetic flux** (most often denoted as Φ_m), is the number of **magnetic** field lines (also called "**magnetic flux** density") passing through a closed surface (such as a conducting coil). The SI unit of **magnetic flux** is the weber (Wb) (in derived units: volt-seconds). The CGS unit is the maxwell.

68. Which chemical compound is also known as Pearl Ash?

- A. Chromium Trioxide
- B. Zinc Phosphide
- C. Potassium Carbonate
- D. None of these

Ans. C

Sol.

- **Potassium Carbonate** (K_2CO_3) is known as **pearl ash**.
- It is used in making glass, dyes, soap.
- It is also used in fire extinguisher and to soften water.
- Zinc Phosphide (Zn_3P_2) is used for killing rats.
- Chromium Trioxide (CrO_3) is mainly used in chrome plating.

69. Which of the following organelle is known as Store house of the cell?

- A. Mitochondria
- B. Golgi apparatus
- C. Endoplasmic Reticulum
- D. Vacuoles

Ans. D

Sol.

Vacuoles are called as Store house of the cell.

- They are found in both plant and animal cells.
- They can even store waste products so the rest of the cell is protected from contamination.
- In plants, vacuole is surrounded by the tonoplast and fills itself with a solution known as cell sap.

70.What is the study of tissue ?

- A. Histology
- B. Agrostology
- C. Bacteriology
- D. None of these

Ans. A

Sol.

- Study of tissue is called histology while the study related to grasses is called Agrostology.
- Study related to bacteria is called Bacteriology.

71.Tendon connects _____.

- A. Bone to Bone
- B. Muscle to bone
- C. None of these
- D. Muscle to muscle

Ans. B

Sol.

- A tendon is a band of fibrous connective tissue that usually connects muscle to bone and is capable of withstanding tension.
- Tendons passively modulate forces during locomotion and provide additional stability.

72.Which of the following glands in human body acts both as a endocrine gland as well as exocrine gland?

- A. Adrenal gland

- B. Lacrimal gland
- C. Pancreas
- D. Thyroid

Ans. C

Sol.

- The pancreas in the human body is a gland organ.
- It is located in the abdomen of the body.
- It is part of the human digestive system.
- It acts both as an endocrine gland as well as exocrine gland.
- As an endocrine gland, it releases juice directly into our bloodstream, and as an exocrine gland, it releases juices into ducts.
- Pancreas juices are secreted by the pancreas into the small intestine which helps in breaking down food in our stomach.
- It also produces insulin which helps in regulating body's glucose level.

73. Which one of the following parasites is a carrier of Taeniasis?

- A. Taenia solium
- B. Neisseria Gonorrhoeae
- C. Bordetella Pertussis
- D. Treponema Palladium
- E. None of the above/More than one of the above

Ans. A

Sol.

The carrier of Taeniasis is a parasite called Taenia solium. The eggs of the causative parasites are present in the intestines of patient individuals, which come out with faeces. When pigs eat this stool, it reaches into the intestine of the pig from where it reaches the pig's muscle. In this stage, it is called Bladder worm. If a person eats undercooked meat of such infected pig, the bladder worm reaches its intestine and develops as tapeworm and sticks to the intestinal wall.

Often, the symptoms of taeniasis are not clearly visible. Sometimes, only indigestion and abdominal pain occur. But whenever larvae are produced in the intestine and reach the central nervous system, eyes, lungs, liver and brain, the patient dies. Only well-cooked pork should be eaten. Nicholson is also used in the treatment of disease.

74. Which vitamin is known as folic acid ?

- A. Vitamin B5
- B. Vitamin B9
- C. Vitamin B12
- D. Vitamin C

Ans. B

Sol.

• **Vitamin B9 is known as folic acid.** Folic acid is found in supplements and fortified foods, while folate occurs naturally in foods.

• Other Information:

- a) Vitamin B5 is known as Pantothenic acid.
- b) Vitamin B12 is known as Cobalamin.
- c) All B Vitamins are water soluble.

75. Bryophytes differ from pteridophyte in being:

- A. Non-vascular
- B. Seeded
- C. Vascular
- D. Saprophytic

Ans. A

Sol.

Bryophytes are embryophytes that are non-vascular i.e., they have no xylem and phloem. Pteridophyte are vascular plants i.e., plants with xylem and phloem, that reproduce and disperse via spores. Bryophytes have no true roots while pteridophyte have true roots. Bryophytes have no vascular tissues while pteridophytes have vascular tissues.

76. Which gas is used for converting vegetable oils into saturated fats?

- A. H₂
- B. O₂
- C. Cl₂
- D. SO₂

Ans. A

Sol. Unsaturated vegetable oils tend to be liquid at room temperature, but they can also be 'hardened' through a chemical process called hydrogenation, to make them solid (as saturated fats) at room temperature. During hydrogenation, vegetable oils are hardened by reacting them with hydrogen gas at about 60°C.

77. Respiration occurs in which part of the cell?

- A. Mitochondria
- B. Blood Cells
- C. Golgi Bodies
- D. Nucleus

Ans. A

Sol.

- **Respiration take place in cells of plant, animals etc.**
- In cell, it happens inside mitochondria, which is located in cell's cytoplasm.
- By Respiration energy is stored in organism in form of ATP molecules.
- It is different from breathing as Respiration releases energy, while breathing is the flow of air into and out of our lungs.

78. The pH of blood is mainly maintained by _____.

- A. Kidney
- B. Liver
- C. Spleen
- D. Pancreas

Ans. A

Sol.

- The pH of blood is mainly maintained by Kidney.
- The kidneys can regulate reabsorption of carbonic acid in the tubule.
- Blood contains large amounts of carbonic acid, a weak acid, and bicarbonate, a base. Together, they help to maintain the blood's pH at 7.4.

79. Which process is responsible for reproduction in *Spirogyra*?

- A. Fragmentation
- B. Budding
- C. Fertilization
- D. Sexual Reproduction

Ans. A

Sol.

Fragmentation in multicellular organisms is a form of asexual reproduction in which an organism is split into fragments. Each of these fragments develop into matured, fully grown individuals that are identical to their parents.

80.The shared terminal duct of the reproductive and urinary system in the human male is:

- A. Urethra
- B. Ureter
- C. Vas deferens
- D. Vasa efferentia

Ans. A

Sol.

- The urethra is the shared terminal duct of the reproductive and urinary system in the human male.
- **Urethra**, the duct that transmits urine from the bladder to the exterior of the body during urination
- The urethra also connects to the ductus deferens in males, for the ejaculation of sperm.
- The **ureters** are tubes made of smooth muscle fibers that propel urine from the kidneys to the urinary bladder.
- **Ductus deferens**, also called **vas deferens**, thick-walled tube in the male reproductive system that transports sperm cells from the epididymis, where the sperm are stored prior to ejaculation.
- The **efferent ducts** or vasa **efferentia** connect the rete testis with the initial section of the epididymis.

81.Fluid part of blood after removal of corpuscles is

- A. Plasma
- B. Serum
- C. Vaccine
- D. Lymph

Ans. A

Sol. Blood consists of plasma and blood corpuscles. Plasma is a liquid part of blood which contains 85-90% water.

82. When a beam of white light passes through a glass prism, the colour of light beam that deviates the least is _____.

- A. Blue
- B. Red
- C. Green
- D. Violet

Ans. B

Sol.

- When a beam of white light passes through a glass prism, the emergent ray is deviated from its original direction by a certain angle.
- This angle is called the angle of deviation.
- During the dispersion of white light, **red colour has the least deviation.**
- **Hence, the correct answer is B**

83. _____ cannot be corrected with spectacles.

- A. Presbyopia
- B. Hypermetropia
- C. Cataract
- D. Myopia

Ans. C

Sol.

- **Cataract** cannot be corrected with spectacles. A cataract is a **dense, cloudy** area that forms in the **lens** of the eye.
- Cataracts often develop slowly and can affect one or both eyes. Symptoms may include faded colors, blurry or double vision, halos around light, trouble with bright lights, and trouble seeing at night.

84. The phenomenon of polarisation of electromagnetic waves proves that electromagnetic waves are _____.

- A. Mechanical
- B. Longitudinal
- C. Transverse
- D. None of these

Ans. C

Sol.

- The phenomenon of polarisation of electromagnetic waves **proves Transverse Nature of Electromagnetic Waves.**
- In an electromagnetic wave, electric and magnetic field vectors are perpendicular to each other and at the same time are perpendicular to the direction of propagation of the wave.
- All types of electromagnetic radiation, including visible light, are transverse waves.

85. When an electric current is passed, the electrons move from?

- A. High potential to low potential
- B. Low potential to high potential
- C. Low potential to low potential
- D. In the direction of electric current

Ans. B

Sol.

When an electric current is passed, the electrons move from **low potential to high potential.**

- Conventional current flows around a circuit from the positive/ high potential side of the cell to the negative/ low potential side.
- Electrons flow around the circuit in the opposite direction from the negative/ low potential side of the cell to the positive/ high potential side.
- Charge is measured in **coulombs** while current is measured in **Ampere.**

86. In an electric motor, the energy transformation is from:

- A. Magnetic energy into electrical energy
- B. Mechanical energy into electrical energy
- C. Electrical energy into magnetic energy
- D. Electrical energy into mechanical energy

Ans. D

Sol. In an electrical motor, the energy transformation is from electrical to mechanical energy through the process of electromagnetic induction.

87. An athlete can take a longer jump if he comes running from a distance as compared to that when he jumps suddenly. Identify the type of inertia?

- A. Inertia of rest
- B. Inertia of motion

C. Inertia of direction

D. Inertia of position

Ans. B

Sol.

- Inertia is the resistance of any physical object to any change in its state of motion, including changes to its speed and direction.
- It is the tendency of objects to keep moving in a straight line at constant velocity. When a person runs from a distance, **the inertia of motion tends to keep him moving in the straight line** and thus he is able to jump higher range compare to the jump he makes when he jump suddenly.

88. A sound of single frequency is called

A. Note

B. Tone

C. Noise

D. Music

Ans. B

Sol.

A sound of single frequency is known as tone. A sound of mixed frequencies is called note. Note which is unpleasant to listen is called noise and note which are pleasant to listen is called music.

89. _____ acid is present in Grapes.

A. Acetic acid

B. Tartaric acid

C. Malic acid

D. Both B & C

Ans. D

Sol.

Usually, the grape juice consists of 70 to 80% water and many dissolved solids including organic and inorganic compounds like sugar, organic acids, phenolic compounds, nitrogenous compounds. The principal organic acids found in grapes are tartaric, malic, and to a small extent, citric. They are an important component of juice and wine.

Acetic acid is present in the vinegar.

90. Which one of the following is the hardest mineral?

- A. Topaz
- B. Quartz
- C. Diamond
- D. Feldspar

Ans. C

Sol. Ten minerals are selected to measure the degree of hardness from 1-10. They are:

1. talc; 2. gypsum; 3. calcite; 4. fluorite; 5. apatite; 6. feldspar; 7. quartz; 8. topaz; 9. corundum; 10. Diamond.

Diamond is always at the top of the scale, being the hardest mineral.

91. Boiling point of water _____ in presence of impurities.

- A. Increases
- B. Decreases
- C. Remains Same
- D. Have slight changes

Ans. A

Sol.

The Boiling point of water increase in presence of impurities. The boiling point is the temperature at which the vapor pressure of the liquid becomes equal to the atmospheric pressure. Adding impurities to a solution, in most cases, increases the boiling point of the solution. This occurs because the presence of impurities decreases the number of water molecules available to become vaporized during boiling.

92. Which type of polymer has the strongest intermolecular force?

- A. Plastic
- B. Elastomer
- C. Fibre
- D. None of the above

Ans. C

Sol.

* On the basis of intermolecular forces, polymers are classified as fibre, plastic and elastomer.

* The decreasing order of intermolecular forces is : fibre > plastic > elastomer.

* Example: Nylon 6,6 (fibre) > Polythene (plastic) > Buna - S (elastomer)

93. What is the unit of measure of a magnetic field?

- A. Tesla
- B. Ohm
- C. Cobalt
- D. Ampere

Ans. A

Sol.

- **Tesla is the unit of Magnetic field.**
- One tesla is equal to one weber per square metre.
- Nicola Tesla is best known for his contributions to the design of the modern alternating current (AC) electricity supply system.

94. What are the characteristics of Apoenzyme?

- A. Inactive enzyme
- B. Form holoenzyme on combining with cofactor
- C. Activation occurs on combining with a cofactor
- D. All of the above

Ans. D

Sol.

- **Apoenzyme** is a protein that forms an active enzyme system by combination with a coenzyme and determines the specificity of this system for a substrate. It is also known as Proenzyme and Zymogen.
- Enzymes that differ in amino acid sequence but catalyze the same chemical reaction, known as **Isozyme**.
- A catalytically active enzyme consisting of a proenzyme combined with its cofactor, known as **Holoenzyme**.

95. Diseases like diarrhoea, dysentery, cholera can be prevented through

- A. Education of health and hygiene
- B. Better health care facilities
- C. Providing safe drinking water
- D. Providing cheap medicines

Ans. C

Sol.

- Globally, there are nearly 1.7 billion cases of childhood diarrhoeal disease every year.
- Waterborne diseases are illnesses caused by microscopic organisms, like viruses and bacteria, that are ingested through contaminated water or by coming in contact with feces.
- Typhoid, cholera, and diarrhea are some examples of waterborne diseases.
- They can be prevented by safe drinking water.
- **Hence, option C is correct.**

96. Which of the following Vitamin is related to Osteoporosis?

- A. Vitamin B
- B. Vitamin A
- C. Vitamin C
- D. Vitamin D

Ans. D

Sol.

- * Vitamin D is related to **Osteoporosis**.
- * **Osteoporosis** is a disease in which bone weakening increases the risk of a broken bone.
- * The deficiency of vitamin D can be potential cause of weakening of bones and eventually to osteoporosis.
- * Other vitamins and their deficiency diseases are-
- * **Vitamin A** deficiency leads to **Night Blindness**.
- * **Vitamin C** deficiency leads to **Scurvy**.
- * **Vitamin B** deficiency leads to **Beriberi**.

97. Mosses and liverworts belong to

- A. Gymnosperm.
- B. Angiosperm.
- C. Bryophyta.
- D. Pteridophyta.

Ans. C

Sol.

Mosses and liverworts belong to Bryophyta.

98. Sucrose is most common sugar which is used in our homes. Sucrose is composed of:

- A. Glucose and Galactose
- B. Fructose and Galactose
- C. Glucose and Fructose
- D. Galactose and Maltose

Ans. C

Sol.

Some of the carbohydrates, which are sweet in taste, are also called sugars. The most common sugar, used in our homes is named as **Sucrose**. Sucrose is produced naturally in plants, from which table sugar is refined.

Sucrose is a disaccharide which is composed of two monosaccharides: Glucose and Fructose. Glucose is the most abundant monosaccharide which is mainly made by plants and most algae during photosynthesis from water and carbon dioxide, using energy from sunlight. Fructose is a simple monosaccharide found which is found in honey, tree, vine fruits and flowers.

Monosaccharides are the simplest form of sugar and the most basic units of carbohydrates. They cannot be further hydrolyzed to simpler chemical compounds. A disaccharide is the sugar formed when two monosaccharides are joined.

99..... is not the same as reproduction.

- A. Budding
- B. Fission
- C. Multiple fission
- D. Regeneration

Ans. D

Sol.

- **Regeneration is not the same as reproduction.**
- The **natural process of replacing or restoring damaged and missing cells, tissues, organs** etc. is called **Regeneration**.
- The **biological process by which new individual organisms are produced from their parent or parents** is called **Reproduction**.
- The **development of a new organism from an outgrowth or bud due to cell division at one particular site** is called **Budding**.

100. Which neuron projections receive signals in a Neuron cell?

- A. Dendrites

- B. Axon
- C. Astrocyte
- D. Oligodendrocyte

Ans. A

Sol.

1. The neuron has projections called **dendrites** that receive signals.
 2. And projections called **axons** that send signals.
- * Also are two types of glial cells:
1. **Astrocytes** to regulate the chemical environment of the nerve cell, and
 2. **Oligodendrocytes** to insulate the axon so the electrical nerve impulse is transferred more efficiently.

