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SCIENCE - Class 10 - Book back (1 Mark)

Fill up the following questions :

Unit -1 LAWS OF MOTION

1. To produce a displacement Force is required
2. Passengers lean forward when sudden brake is applied in a moving vehicle. This can be explained by the Inertia of Motion
3. By convention, the clockwise moments are taken as Negative and the anticlockwise moments are taken as Positive.
4. Acceleration is used to change the speed of car.
5. A man of mass 100 kg has a weight of 980 N at the surface of the Earth

Unit - 2 OPTICS

1. The path of the light is called as Ray of Light
2. The refractive index of a transparent medium is always greater than 1 .
3. If the energy of incident beam and the scattered beam are same, then the scattering of light is called as Elastic scattering.
4. According to Rayleigh's scattering law, the amount of scattering of light is inversely proportional to the fourth power of its Wavelength
5. Amount of light entering into the eye is controlled by Iris.

Unit -3 THERMAL PHYSICS

1. The value of Avogadro number $6.023 \times 10^{23} / \text{mol}$
2. The temperature and heat are Scalar quantities
3. One calorie is the amount of heat energy required to raise the temperature of 1 gram of water through 1° Celcius .
4. According to Boyle's law, the shape of the graph between pressure and reciprocal of volume is Straight line

Unit - 4 ELECTRICITY

1. When a circuit is open, current cannot pass through it.
2. The ratio of the potential difference to the current is known as Ohm's Law .
3. The wiring in a house consists of Domestic electric circuits.
4. The power of an electric device is a product of Electric current and Potential Difference .
5. LED stands for Light Emitting Diode .

Unit - 5 ACOUSTICS

1. Rapid back and forth motion of a particle about its mean position is called Vibration
2. If the energy in a longitudinal wave travels from south to north, the particles of the medium would be vibrating in both North and South .
3. A whistle giving out a sound of frequency 450 Hz, approaches a stationary observer at a speed of 33 ms^{-1} . The frequency heard by the observer is (speed of sound = 330 ms^{-1}) 500 Hz.
4. A source of sound is travelling with a velocity 40 km/h towards an observer and emits a sound of frequency 2000 Hz. If the velocity of sound is 1220 km/h, then the apparent frequency heard by the observer is 2068 Hz.

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Unit - 6 NUCLEAR PHYSICS

- One roentgen is equal to 2.58×10^{-4} disintegrations per second
 - Positron is an Antiparticle of Electron.
 - Anemia can be cured by Radio Iron (Fe^{59}) isotope.
 - Abbreviation of ICRP International Commission on Radiological Protection.
 - Roentgen is used to measure exposure rate of radiation in humans.
 - Gamma Rays has the greatest penetration power.
 - ${}_Z Y^A \rightarrow {}_{Z+1} Y^A + X$; Then, X is $-1e^0$ (β decay).
 - ${}_Z X^A \rightarrow {}_Z Y^A$ This reaction is possible in Gamma (γ) decay.
 - The average energy released in each fusion reaction is about 3.84×10^{-12} J.
 - Nuclear fusion is possible only at an extremely high temperature of the order of 10^7 to 10^9 K.
 - The radio isotope of Phosphorus – 32 helps to increase the productivity of crops.
 - If the radiation exposure is 100 R, it may cause Fata Disease.
- Spontaneous process : Natural Radioactivity, Induced process : Artificial Radioactivity (or) Man made activity
 - Nuclear Fusion : Extreme temperature, Nuclear Fission : Room Temperature
 - Increasing crops : Radio phosphorous, Effective functioning of heart : Radio Sodium (N_a 24)
 - Deflected by electric field : α ray, Null Deflection : gamma ray

Unit - 7 ATOMS AND MOLECULES

- Atoms of different elements having same mass number, but different atomic numbers are called isobars.
- Atoms of one element can be transmuted into atoms of other element by Artificial Transmutation
- The sum of the numbers of protons and neutrons of an atom is called its Mass Number
- Relative atomic mass is otherwise known as Standard Atomic Weight
- The average atomic mass of hydrogen is 1.008 amu.
- If a molecule is made of similar kind of atoms, then it is called Homo atomic molecule.
- The number of atoms present in a molecule is called its Atomicity
- One mole of any gas occupies 22400 ml at S.T.P
- Atomicity of phosphorous is 4.

Unit - 8 PERIODIC CLASSIFICATION OF ELEMENTS

- If the electronegativity difference between two bonded atoms in a molecule is greater than 1.7, the nature of bonding is Ionic bond.
- The Sixth Period is the longest period in the periodical table.
- Atomic Number forms the basis of modern periodic table.
- If the distance between two Cl atoms in Cl_2 molecule is 1.98 \AA , then the radius of Cl atom is 0.99 \AA
- Among the given species A^- , A^+ , and A, the smallest one in size is A^+ .
- The scientist who propounded the modern periodic law is Dimitri Mendeleev.
- Across the period, ionic radii decreases (increases, decreases).
- Lanthanides and Actinides are called inner transition elements.
- The chief ore of Aluminium is Bauxite ($Al_2O_3 \cdot 2H_2O$).
- The chemical name of rust is Hydrated Ferric Oxide.

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Unit - 9 SOLUTION

1. The component present in lesser amount, in a solution is called **Solute**
2. Example for liquid in solid type solution is **Sodium Chloride dissolved in water**
3. Solubility is the amount of solute dissolved in **100** g of solvent.
4. Polar compounds are soluble in **Polar** solvents
5. Volume percentage decreases with increases in temperature because **Expansion of Liquid**

Unit - 10 TYPES OF CHEMICAL REACTIONS

1. A reaction between an acid and a base is called **Neutralisation** .
2. When lithium metal is placed in hydrochloric acid, **Hydrogen** gas is evolved.
3. The equilibrium attained during the melting of ice is known as **Physical Equilibrium** .
4. The pH of a fruit juice is 5.6. If you add slaked lime to this juice, its pH **Increase** (increase / decrease)
5. The value of ionic product of water at 25°C is **1×10^{-14}** .
6. The normal pH of human blood is **7.4**
7. Electrolysis is type of **Decomposition** reaction
8. The number of products formed in a synthesis reaction is **1** .
9. Chemical volcano is an example for **Decomposition** type of reaction
10. The ion formed by dissolution of H⁺ in water is called **Hydronium Ion** .

Unit - 11 CARBON AND ITS COMPOUNDS

1. An atom or a group of atoms which is responsible for chemical characteristics of an organic compound is called **Functional Groups** .
2. The general molecular formula of alkynes is **C_nH_{2n-2}** .
3. In IUPAC name, the carbon skeleton of a compound is represented by **root word** (root word / prefix / suffix)
4. (Saturated / Unsaturated) **Unsaturated** compounds decolourize bromine water.
5. Dehydration of ethanol by conc. Sulphuric acid forms **ethene** (ethene/ ethane)
6. 100 % pure ethanol is called **Absolute Alcohol** .
7. Ethanoic acid turns **Blue** litmus to **Red** .
8. The alkaline hydrolysis of fatty acids is termed as **Saponification** .
9. Biodegradable detergents are made of **straight** (branched / straight) chain hydrocarbons

Unit - 12 PLANT ANATOMY AND PLANT PHYSIOLOGY

1. The innermost layer of cortex in root is called **Epidermis and Endodermis** .
2. Xylem and phloem are arranged in an alternate radii constitute a vascular bundle called **Conjoint Bundles** .
3. Glycolysis takes place in **the Cytoplasm of the Cell** .
4. The source of O₂ liberated in photosynthesis is **the splitting of water molecules** .
5. **Mitochondria** is ATP factory of the cells

Unit - 13 STRUCTURAL ORGANISATION OF ANIMALS

1. The posterior sucker is formed by the fusion of the **last seven** segments.
2. The existence of two sets of teeth in the life of an animal is called **Diphyodont** dentition.
3. The anterior end of leech has a lobe-like structure called **sucker** .
4. The blood sucking habit of leech is known as **Sanguivorus** .
5. **Nephrons** separate nitrogenous waste from the blood in rabbit.
6. **37 pairs of** spinal nerves are present in rabbit.

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Unit - 14 TRANSPORTATION IN PLANTS AND CIRCULATION IN ANIMALS

1. Transpiration involves evaporative loss of water from aerial parts.
2. Water enters into the root hair cell through Osmosis membrane.
3. Part of the root that absorbs water from the soil is Root Hairs .
4. Normal blood pressure is 120mm / 80mm Hg .
5. The normal human heartbeat rate is about 72 - 75 time per minute.

Unit - 15 NERVOUS SYSTEM

1. Neuron / Auxin is the longest cell in our body.
2. Impulses travels rapidly in Myelin Sheath neurons.
3. A change in the environment that causes an animal to react is called Reactions or Responses.
4. Dendrites carries the impulse towards the cell body.
5. The two antagonistic component of autonomic nervous system are Sympathetic and Parasympathetic .
6. A neuron contains all cell organelles except Golgi Apparatus in Auxin
7. Cerebrospinal Fluid maintains the constant pressure inside the cranium.
8. Gyri and Sulci increases the surface area of cerebrum.
9. The part of human brain which acts as relay center is Thalamus

Unit - 16 PLANT AND ANIMAL HORMONES

1. Auxin causes cell elongation, apical dominance and prevents abscission.
2. Ethylene is a gaseous hormone involved in abscission of organs and acceleration of fruit ripening.
3. Abscisic Acid causes stomatal closure.
4. Gibberellins induce stem elongation in Corn and Pea plants.
5. The hormone which has negative effect on apical dominance is Cytokinin .
6. Calcium metabolism of the body is controlled by Parathormone .
7. In the islets of Langerhans, beta cells secrete Insulin .
8. The growth and functions of thyroid gland is controlled by Hormone T₃ and T₄.
9. Decreased secretion of thyroid hormones in the children leads to Cretinism .

Unit - 17 REPRESENTATION IN PLANTS AND ANIMALS

1. The embryo sac in a typical dicot at the time of fertilization is Female Gametophyte .
2. After fertilization the ovary develops into fruit .
3. Planaria reproduces asexually by regeneration .
4. Fertilization is Internal in humans.
5. The implantation of the embryo occurs at about 6 to 7 day of fertilization
6. Colostrum is the first secretion from the mammary gland after child birth
7. Prolactin is a hormone produced by Anterior Pituitary .

Unit - 18 GENETICS

1. The pairs of contrasting character (traits) of Mendel are called Alleles or Allelomorphs .
2. Physical expression of a gene is called Phenotype .
3. The thin thread like structures found in the nucleus of each cell are called Chromosomes .
4. DNA consists of two Polynucleotide chains
5. An inheritable change in the amount or the structure of a gene or a chromosome is called Mutation .

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Unit - 19 ORIGIN AND EVOLUTION OF LIFE

1. The characters developed by the animals during their life time, in response to the environmental changes are called Acquired character .
2. The degenerated and non-functional organs found in an organism are called Vestigial Organ.
3. The forelimbs of bat and human are examples of Homologous organs.
4. The theory of natural selection for evolution was proposed by Charles Darwin .

Unit - 20 BREEDING AND BIOTECHNOLOGY

1. Economically important crop plants with superior quality are raised by breeding .
2. A protein rich wheat variety is Atlas 66 .
3. Colchicine is the chemical used for doubling the chromosomes.
4. The scientific process which produces crop plants enriched with desirable nutrients is called Biofortification .
5. Rice normally grows well in alluvial soil, but Atomita-2 is a rice variety produced by mutation breeding that grows well in saline soil.
6. Recombinant DNA technique made it possible to genetically engineer living organism.
7. Restriction endonucleases cut the DNA molecule at specific positions known as Molecular Scissors .
8. Similar DNA fingerprinting is obtained for Identical Twins .
9. Stem cells are undifferentiated mass of cells.
10. In gene cloning the DNA of interest is integrated in a Vector (Plasmid) .

Unit - 21 HEALTH AND DISEASES

1. Cirrhosis is caused in liver due to excessive use of Alcohol .
2. A highly poisonous chemicals derived from tobacco is Nicotine .
3. Blood cancer is called Leukaemia .
4. Less response of a drug to a specific dose with repeated use is called Tolerance .
5. Insulin resistance is a condition in Type - 2 diabetes mellitus.

Unit - 22 ENVIRONMENTAL MANAGEMENT

1. Deforestation leads to Reduction in rainfall.
2. Removal of soil particles from the land is called Soil Erosion .
3. Chipko movement is initiated against the cutting down of trees .
4. Nilgiris is a biosphere reserve in Tamilnadu.
5. Tidal energy is Non-conventional or Renewable type of energy.
6. Coal, petroleum and natural gas are called Fossil fuels.
7. Coal is the most commonly used fuel for the production of electricity.

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Match the following :

Unit - 1 LAWS OF MOTION

- | | | |
|---|--------------------------------|-----|
| a. Newton's I law | - propulsion of a rocket | [d] |
| b. Newton's II law | - Stable equilibrium of a body | [a] |
| c. Newton's III law | - Law of force | [b] |
| d. Law of conservation of Linear momentum | - Flying nature of bird | [c] |

Unit - 2 OPTICS

- | | | |
|--------------------|---------------------------|-----|
| 1. Retina | a. Path way of light | [2] |
| 2. Pupil | b. Far point comes closer | [4] |
| 3. Ciliary muscles | c. near point moves away | [5] |
| 4. Myopia | d. Screen of the eye | [1] |
| 5. Hypermetropia | e. Power of accommodation | [3] |

Unit -3 THERMAL PHYSICS

- | | | |
|--------------------------|---|-----|
| 1. Linear expansion | - (a) change in volume | [3] |
| 2. Superficial expansion | - (b) hot body to cold body | [4] |
| 3. Cubical expansion | - (c) $1.381 \times 10^{-23} \text{ JK}^{-1}$ | [5] |
| 4. Heat transformation | - (d) change in length | [1] |
| 5. Boltzmann constant | - (e) change in area | [2] |

Unit - 4 ELECTRICITY

- | | | |
|---------------------------|---------------|-------|
| (i) electric current | (a) volt | [ii] |
| (ii) potential difference | (b) ohm meter | [iii] |
| (iii) specific resistance | (c) watt | [iv] |
| (iv) electrical power | (d) joule | [v] |
| (v) electrical energy | (e) ampere | [i] |

Unit - 5 ACOUSTICS

- | | | |
|-------------------------|-----------------------|-----|
| 1. Infrasonic | - (a) Compressions | [4] |
| 2. Echo | - (b) 22 KHz | [3] |
| 3. Ultrasonic | - (c) 10 Hz | [1] |
| 4. High pressure region | - (d) Ultrasonography | [2] |

Unit - 6 NUCLEAR PHYSICS

Match: I

- | | | |
|---------------------------------------|-----------|-----|
| a. BARC | Kalpakkam | [c] |
| b. India's first atomic power station | Apsara | [d] |
| c. IGCAR | Mumbai | [a] |
| d. First nuclear reactor in India | Tarapur | [b] |

Match: II

- | | | |
|-----------------|--------------|-----|
| a. Fuel | lead | [d] |
| b. Moderator | heavy water | [c] |
| c. Control rods | cadmium rods | [b] |
| d. Shield | uranium | [a] |

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Match: III

- | | | |
|--------------------|--------------------------|-----|
| a. Soddy Fajan | Natural radioactivity | [c] |
| b. Irene Curie | Displacement law | [a] |
| c. Henry Bequerel | Mass energy equivalence | [d] |
| d. Albert Einstein | Artificial Radioactivity | [b] |

Match: IV

- | | | |
|----------------------------------|-----------------|-----|
| a. Uncontrolled fission reaction | Hydrogen Bomb | [d] |
| b. Fertile material | Nuclear Reactor | [c] |
| c. Controlled fission reaction | Breeder reactor | [d] |
| d. Fusion reaction | Atom bomb | [a] |

Match: V

- | | | |
|------------|-------------------|-----|
| a. Fe - 59 | Age of fossil | [d] |
| b. I - 131 | Function of Heart | [c] |
| c. Na - 24 | Leukemia | [a] |
| d. C - 14 | Thyroid disease | [b] |

Unit - 7 ATOMS AND MOLECULES

- | | | |
|------------------------------|--------------|-----|
| 1. 8 g of O ₂ | - 4 moles | [4] |
| 2. 4 g of H ₂ | - 0.25 moles | [1] |
| 3. 52 g of He | - 2 moles | [2] |
| 4. 112 g of N ₂ | - 0.5 moles | [5] |
| 5. 35.5 g of Cl ₂ | - 13 moles | [3] |

Unit - 8 PERIODIC CLASSIFICATION OF ELEMENTS

- | | | |
|----------------------|---------------------------------|-----|
| 1. Galvanisation | - Noble gas elements | [5] |
| 2. Calcination | - Coating with Zn | [1] |
| 3. Redox reaction | - Silver-tin amalgam | [4] |
| 4. Dental filling | - Alumino thermic process | [3] |
| 5. Group 18 elements | - Heating in the absence of air | [2] |

Unit - 9 SOLUTION

- | | | |
|------------------|---|-----|
| 1. Blue vitriol | - CaSO ₄ .2H ₂ O | [2] |
| 2. Gypsum | - CaO | [4] |
| 3. Deliquescence | - CuSO ₄ . 5H ₂ O | [1] |
| 4. Hygroscopic | - NaOH | [3] |

Unit - 10 TYPES OF CHEMICAL REACTIONS

- | REACTION | TYPE | |
|--|-----------------------|-----|
| 1. NH ₄ OH(aq) + CH ₃ COOH(aq) → CH ₃ COONH ₄ (aq) + H ₂ O(l) | Single Displacement | [2] |
| 2. Zn(s) + CuSO ₄ (aq) → ZnSO ₄ (aq) + Cu(s) | Combustion | [4] |
| 3. ZnCO ₃ (s) + Heat → ZnO(s) + CO ₂ (g) | Neutralisation | [1] |
| 4. C ₂ H ₄ (g) + 4O ₂ (g) → 2CO ₂ (g) + 2H ₂ O(g) + Heat | Thermal decomposition | [3] |

Unit - 11 CARBON AND ITS COMPOUNDS

- | | | |
|-------------------------|----------------------|-----|
| 1. Functional group -OH | - Benzene | [5] |
| 2. Heterocyclic | - Potassium stearate | [4] |
| 3. Unsaturated | - Alcohol | [1] |
| 4. Soap | - Furan | [2] |
| 5. Carbocyclic | - Ethene | [3] |

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Unit - 12 PLANT ANATOMY AND PLANT PHYSIOLOGY

1. Amphicribal - *Dracaena* [3]
2. Cambium - Translocation of food [5]
3. Amphivasal - Fern [1]
4. Xylem - Secondary growth [2]
5. Phloem - Conduction of water [4]

Unit - 13 STRUCTURAL ORGANISATION OF ANIMALS

Organs	Membranous covering	Location
1. Brain	Pleura	[4] Abdominal cavity [2]
2. Kidney	capsule	[2] mediastinum [4]
3. Heart	Meninges	[1] Enclosed in thoracic cavity [3]
4. Lungs	Pericardium	[3] Cranial cavity [1]

Unit - 14 TRANSPORTATION IN PLANTS AND CIRCULATION IN ANIMALS

Section I

1. Symplastic pathway - Leaf [2]
2. Transpiration - Plasmodesmata [1]
3. Osmosis - Pressure in xylem [4]
4. Root Pressure - Pressure gradient [3]

Section II

1. Leukemia - Thrombocytes [2]
2. Platelets - Phagocyte [3]
3. Monocytes - Decrease in leucocytes [4]
4. Leucopenia - Blood Cancer [1]
5. AB blood group - Allergic condition [7]
6. O blood group - Inflammation [8]
7. Eosinophil - Absence of antigen [6]
8. Neutrophils - Absence of antibody [5]

Unit - 15 NERVOUS SYSTEM

- A. Nissl's granules -Forebrain [B]
- B. Hypothalamus - Peripheral Nervous system [D]
- C. Cerebellum - Cyton [A]
- D. Schwann cell - Hindbrain [C]

Unit - 16 PLANT AND ANIMAL HORMONES

Column I	Column II	Column III
1. Auxin	<i>Gibberella fujikuroi</i>	Abscission
2. Ethylene	Coconut milk	Internodal elongation
3. Abscisic acid	Coleoptile tip	Apical dominance
4. Cytokinin	Chloroplast	Ripening
5. Gibberellins	Fruits	Cell division

Answer

Column I	Column II	Column III
1. Auxin	Coleoptile tip	Apical dominance
2. Ethylene	Fruits	Ripening
3. Abscisic acid	Chloroplast	Abscission
4. Cytokinin	Coconut milk	Cell division
5. Gibberellins	<i>Gibberella fujikuroi</i>	Internodal elongation

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Hormones Disorders

- | | | |
|-------------------|----------------------|-----|
| a. Thyroxine | - Acromegaly | [d] |
| b. Insulin | - Tetany | [c] |
| c. Parathormone | - Simple goiter | [a] |
| d. Growth hormone | - Diabetes insipidus | [e] |
| e. ADH | - Diabetes mellitus | [b] |

Unit - 17 REPRESENTATION IN PLANTS AND ANIMALS

- | <u>Column 1</u> | <u>Column 2</u> | |
|------------------|--|-----|
| 1. Fission | Spirogyra | [3] |
| 2. Budding | Amoeba | [1] |
| 3. Fragmentation | Yeast | [2] |
| a) Parturition | - 1) Duration between pregnancy and birth | [b] |
| b) Gestation | - 2) Attachment of zygote to endometrium | [d] |
| c) Ovulation | - 3) Delivery of baby from uterus | [a] |
| d) Implantation | - 4) Release of egg from Graafian follicle | [c] |

Unit - 18 GENETICS

- | | | |
|----------------------|---------------------------------------|-----|
| 1. Autosomes | - Trisomy 21 | [4] |
| 2. Diploid condition | - 9:3:3:1 | [5] |
| 3. Allosome | - 22 pair of chromosome | [1] |
| 4. Down's syndrome | - 2n | [2] |
| 5. Dihybrid ratio | - 23 rd pair of chromosome | [3] |

Unit - 19 ORIGIN AND EVOLUTION OF LIFE

- | <u>Column A</u> | <u>Column B</u> | |
|----------------------|---|-----|
| a) Atavism | caudal vertebrae and vermiform appendix | [b] |
| b) Vestigial organs | a forelimb of a cat and a bat's wing | [d] |
| c) Analogous organs | rudimentary tail and thick hair on the body | [a] |
| d) Homologous organs | a wing of a bat and a wing of an insect | [c] |
| e) Wood park | radiocarbon dating | [f] |
| f) W.F. Libby | Thiruvakkarai | [e] |

Unit - 20 BREEDING AND BIOTECHNOLOGY

- | | | |
|----------------|---|-----|
| 1. Sonalika | Phaseolus mungo | [4] |
| 2. IR 8 | Sugarcane | [3] |
| 3. Saccharum | Semi-dwarf wheat | [1] |
| 4. Mung No. 1 | Ground nut | [5] |
| 5. TMV - 2 | Semi-dwarf Rice | [2] |
| 6. Insulin | Bacillus thuringiensis | [7] |
| 7. Bt toxin | Beta carotene | [8] |
| 8. Golden rice | first hormone produced using rDNA technique | [6] |

Unit - 21 HEALTH AND DISEASES

- | | | |
|--------------------------|--------------------------------------|-----|
| 1. Sarcoma | - Stomach cancer | [2] |
| 2. Carcinoma | - Excessive thirst | [3] |
| 3. Polydipsia | - Excessive hunger | [4] |
| 4. Polyphagia | - Lack of blood flow to heart muscle | [5] |
| 5. Myocardial Infarction | - Connective tissue cancer | [1] |

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Unit - 22 ENVIRONMENTAL MANAGEMENT

- | | | |
|--------------------|-------------------------|-----|
| 1. Soil erosion | - energy saving | [5] |
| 2. Bio gas | - acid rain | [6] |
| 3. Natural gas | - removal of vegetation | [1] |
| 4. Green house gas | - renewable energy | [2] |
| 5. CFL bulbs | - CO ₂ | [4] |
| 6. Wind | - non-renewable energy | [3] |
| 7. Solid waste | - lead and heavy metals | [7] |

Unit - 23 VISUAL COMMUNICATION

- | | | |
|-------------------|--------------------|-----|
| 1. Script Area | Type notes | [5] |
| 2. Folder | Animation software | [3] |
| 3. Scratch | Edit programs | [4] |
| 4. Costume editor | Store files | [2] |
| 5. Notepad | Build Scripts | [1] |

True or False :

Unit -1 LAWS OF MOTION

- | | |
|---|---------|
| 1. The linear momentum of a system of particles is always conserved. | [False] |
| 2. Apparent weight of a person is always equal to his actual weight | [True] |
| 3. Weight of a body is greater at the equator and less at the polar region. | [False] |
| 4. Turning a nut with a spanner having a short handle is so easy than one with a long handle. | [False] |
| 5. There is no gravity in the orbiting space station around the Earth. So the astronauts feel weightlessness. | [False] |

Unit - 2 OPTICS

- | | |
|---|---------|
| 1. Velocity of light is greater in denser medium than in rarer medium | [False] |
| 2. The power of lens depends on the focal length of the lens | [True] |
| 3. Increase in the converging power of eye lens cause 'hypermetropia' | [True] |
| 4. The convex lens always gives small virtual image. | [False] |

Unit -3 THERMAL PHYSICS

- | | |
|---|---------|
| 1. For a given heat in liquid, the apparent expansion is more than that of real expansion. | [False] |
| 2. Thermal energy always flows from a system at higher temperature to a system at lower temperature. | [True] |
| 3. According to Charles's law, at constant pressure, the temperature is inversely proportional to volume. | [False] |

Unit - 4 ELECTRICITY

- | | |
|---|---------|
| 1. Ohm's law states the relationship between power and voltage. | [False] |
| 2. MCB is used to protect house hold electrical appliances. | [True] |
| 3. The SI unit for electric current is the coulomb. | [False] |
| 4. One unit of electrical energy consumed is equal to 1000 kilowatt hour. | [True] |
| 5. The effective resistance of three resistors connected in series is lesser than the lowest of the individual resistances. | [False] |

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Unit - 5 ACOUSTICS

1. Sound can travel through solids, gases, liquids and even vacuum. [False]
2. Waves created by Earth Quake are Infrasonic. [True]
3. The velocity of sound is independent of temperature. [False]
4. The Velocity of sound is high in gases than liquids. [False]

Unit - 6 NUCLEAR PHYSICS

1. Plutonium -239 is a fissionable material. [True]
2. Elements having atomic number greater than 83 can undergo nuclear fusion. [False]
3. Nuclear fusion is more dangerous than nuclear fission. [False]
4. Natural uranium U-238 is the core fuel used in a nuclear reactor. [False]
5. If a moderator is not present, then a nuclear reactor will behave as an atom bomb. [True]
6. During one nuclear fission on an average, 2 to 3 neutrons are produced. [True]
7. Einstein's theory of mass energy equivalence is used in nuclear fission and fusion. [True]

Unit - 7 ATOMS AND MOLECULES

1. Two elements sometimes can form more than one compound. [True]
2. Noble gases are Diatomic [False]
3. The gram atomic mass of an element has no unit [False]
4. 1 mole of Gold and Silver contain same number of atoms [True]
5. Molar mass of CO₂ is 42g. [False]

Unit - 8 PERIODIC CLASSIFICATION OF ELEMENTS

1. Moseley's periodic table is based on atomic mass. [False]
2. Ionic radius increases across the period from left to right. [False]
3. All ores are minerals; but all minerals cannot be called as ores; [True]
4. Al wires are used as electric cables due to their silvery white colour. [False]
5. An alloy is a heterogenous mixture of metals. [False]

Unit - 9 SOLUTION

1. Solutions which contain three components are called binary solution. [False]
2. In a solution the component which is present in lesser amount is called solvent. [False]
3. Sodium chloride dissolved in water forms a non-aqueous solution. [False]
4. The molecular formula of green vitriol is MgSO₄ .7H₂O [True]
5. When Silica gel is kept open, it absorbs moisture from the air, because it is hygroscopic in nature [True]

Unit - 10 TYPES OF CHEMICAL REACTIONS

1. Silver metal can displace hydrogen gas from nitric acid. [False]
2. The pH of rain water containing dissolved gases like SO₃, CO₂, NO₂ will be less than 7. [True]
3. At the equilibrium of a reversible reaction, the concentration of the reactants and the products will be equal. [False]
4. Periodical removal of one of the products of a reversible reaction increases the yield. [True]
5. On Dipping a pH paper in a solution, it turns into yellow. Then the solution is basic. [True]

Unit - 12 PLANT ANATOMY AND PLANT PHYSIOLOGY

1. Phloem tissue is involved in the transport of water in plant. [False]
2. The waxy protective covering of a plant is called as cuticle. [True]

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3. In monocot stem cambium is present in between xylem and phloem. [False]
4. Palisade parenchyma cells occur below upper epidermis in dicot root. [False]
5. Mesophyll contains chlorophyll. [True]
6. Anaerobic respiration produces more ATP than aerobic respiration. [True]

Unit - 13 STRUCTURAL ORGANISATION OF ANIMALS

1. An anticoagulant present in saliva of leech is called heparin. [False]
2. The vas deferens serves to transport the ovum. [False]
3. Diastema is a gap between premolar and molar teeth in rabbit. [False]
4. The cerebral hemispheres of rabbit are connected by band of nerve tissue called corpora quadrigemina. [False]

Unit - 14 TRANSPORTATION IN PLANTS AND CIRCULATION IN ANIMALS

1. The phloem is responsible for the translocation of food. [True]
2. Plants lose water by the process of transpiration. [True]
3. The form of sugar transported through the phloem is glucose. [False]
4. In apoplastic movement the water travels through the cell membrane and enter the cell. [False]
5. When guard cells lose water the stoma opens. [False]
6. Initiation and stimulation of heart beat take place by nerves. [True]
7. All veins carry deoxygenated blood. [False]
8. WBC defend the body from bacterial and viral infections. [True]
9. The closure of the mitral and tricuspid valves at the start of the ventricular systole produces the first sound 'LUBB'. [True]

Unit - 15 NERVOUS SYSTEM

1. Dendrons are the longest fibres that conducts impulses away from the cell body. [False]
2. Sympathetic nervous system is a part of central nervous system. [False]
3. Hypothalamus is the thermoregulatory centre of human body. [True]
4. Cerebrum controls the voluntary actions of our body. [True]
5. In the central nervous system myelinated fibres form the white matter. [False]
6. All the nerves in the body are covered and protected by meninges. [False]
7. Cerebrospinal fluid provides nutrition to brain. [True]
8. Reflex arc allows the rapid response of the body to a stimulus. [True]
9. Pons helps in regulating respiration [True]

Unit - 16 PLANT AND ANIMAL HORMONES

1. A plant hormone concerned with stimulation of cell division and promotion of nutrient mobilization is cytokinin. [True]
2. Gibberellins cause parthenocarpy in tomato. [True]
3. Ethylene retards senescence of leaves, flowers and fruits. [False]
4. Exophthalmic goiter is due to the over secretion of thyroxine. [True]
5. Pituitary gland is divided into four lobes. [False]
6. Estrogen is secreted by corpus luteum. [False]

Unit - 17 REPRESENTATION IN PLANTS AND ANIMALS

1. Stalk of the ovule is called pedicle. [False]
2. Seeds are the product of asexual reproduction. [False]
3. Yeast reproduces asexually by means of multiple fission. [False]

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4. The part of the pistil which serves as a receptive structure for the pollen is called as style [False]
5. Insect pollinated flowers are characterized by dry and smooth pollen. [False]
6. Sex organs produce gametes which are diploid. [False]
7. LH is secreted by the posterior pituitary. [False]
8. Menstrual cycle ceases during pregnancy. [True]
9. Surgical methods of contraception prevent gamete formation. [True]
10. The increased level of estrogen and progesterone is responsible for menstruation. [False]

Unit - 18 GENETICS

1. A typical Mendelian dihybrid ratio of F₂ generation is 3:1. [False]
2. A recessive factor is altered by the presence of a dominant factor. [True]
3. Each gamete has only one allele of a gene. [True]
4. Hybrid is an offspring from a cross between genetically different parents. [True]
5. Some of the chromosomes have elongated knob-like appendages known as telomere. [False]
6. New nucleotides are added and new complementary strand of DNA is formed with the help of enzyme DNA polymerase. [True]
7. Down's syndrome is the genetic condition with 45 chromosomes. [False]

Unit - 19 ORIGIN AND EVOLUTION OF LIFE

1. The use and disuse theory of organs' was postulated by Charles Darwin. [False]
2. The homologous organs look similar and perform similar functions but they have different origin and developmental pattern. [False]
3. Birds have evolved from reptiles [True]

Unit - 20 BREEDING AND BIOTECHNOLOGY

1. *Raphano brassica* is a man-made tetraploid produced by colchicine treatment. [True]
2. The process of producing an organism with more than two sets of chromosome is called mutation. [False]
3. A group of plants produced from a single plant through vegetative or asexual reproduction are called a pureline. [False]
4. Iron fortified rice variety determines the protein quality of the cultivated plant [False]
5. Golden rice is a hybrid. [False]
6. Bt gene from bacteria can kill insects. [True]
7. *In vitro fertilisation* means the fertilisation done inside the body. [True]
8. DNA fingerprinting technique was developed by Alec Jeffrey. [True]
9. Molecular scissors refers to DNA ligases. [False]

Unit - 21 HEALTH AND DISEASES

1. AIDS is an epidemic disease. [False]
2. Cancer causing genes are called Oncogenes. [True]
3. Obesity is characterized by tumour formation. [False]
4. In leukemia both WBCs and RBCs increase in number. [False]
5. Study of cause of disease is called etiology. [False]
6. AIDS is not transmitted by contact with a patient's clothes. [True]
7. Type 2 diabetes mellitus results due to insulin deficiency. [False]
8. Carcinogens are cancer causing agents. [True]
9. Nicotine is a narcotic drug. [False]
10. Cirrhosis is associated with brain disorder. [False]

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Unit - 22 ENVIRONMENTAL MANAGEMENT

1. Biogas is a fossil fuel. [False]
2. Planting trees increases the groundwater level. [True]
3. Habitat destruction cause loss of wild life. [True]
4. Nuclear energy is a renewable energy. [False]
5. Overgrazing prevents soil erosion. [False]
6. Poaching of wild animals is a legal act. [False]
7. National park is a protected park. [True]
8. Wild life protection act was established in 1972. [True]

Choose the best answer :

Unit -1 LAWS OF MOTION

- 1) **Inertia of a body depends on**
 - a) weight of the object
 - b) acceleration due to gravity of the planet
 - c) mass of the object
 - d) Both a & b
- 2) **Impulse is equals to**
 - a) rate of change of momentum
 - b) rate of force and time
 - c) change of momentum
 - d) rate of change of mass
- 3) **Newton's III law is applicable**
 - a) for a body is at rest
 - b) for a body in motion
 - c) both a & b
 - d) only for bodies with equal masses
- 4) **Plotting a graph for momentum on the Y-axis and time on X-axis. slope of momentum-time graph gives**
 - a) Impulsive force
 - b) Acceleration
 - c) Force
 - d) Rate of force
- 5) **In which of the following sport the turning of effect of force used**
 - a) swimming
 - b) tennis
 - c) cycling
 - d) hockey
- 6) **The unit of 'g' is $m s^{-2}$. It can be also expressed as**
 - a) cms^{-1}
 - b) Nkg^{-1}
 - c) Nm^2kg^{-1}
 - d) cm^2s^{-2}
- 7) **One kilogram force equals to**
 - a) 9.8 dyne
 - b) $9.8 \times 10^4 N$
 - c) $98 \times 10^4 dyne$
 - d) 980 dyne
- 8) **The mass of a body is measured on planet Earth as M kg. When it is taken to a planet of radius half that of the Earth then its value will be ___ kg**
 - a) 4 M
 - b) 2M
 - c) M/4
 - d) M
- 9) **If the Earth shrinks to 50% of its real radius its mass remaining the same, the weight of a body on the Earth will**
 - a) decrease by 50%
 - b) increase by 50%
 - c) decrease by 25%
 - d) increase by 300%
- 10) **To project the rockets which of the following principle(s) is/are required?**
 - a) Newton's third law of motion
 - b) Newton's law of gravitation
 - c) law of conservation of linear momentum
 - d) both a and c

Unit - 2 OPTICS

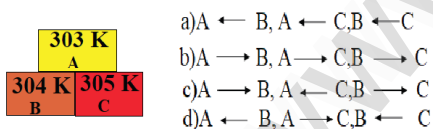
1. **The refractive index of four substances A, B, C and D are 1.31, 1.43, 1.33, 2.4 respectively. The speed of light is maximum in**
 - a) A
 - b) B
 - c) C
 - d) D
2. **Where should an object be placed so that a real and inverted image of same size is obtained by a convex lens**
 - a) f
 - b) 2f
 - c) infinity
 - d) between f and 2f
3. **A small bulb is placed at the principal focus of a convex lens. When the bulb is switched on, the lens will produce**

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- a) a convergent beam of light
 c) a parallel beam of light
- b) a divergent beam of light
 d) a coloured beam of light
4. **Magnification of a convex lens is**
 a) Positive
 b) negative
 c) either positive or negative
 d) zero
5. **A convex lens forms a real, diminished point sized image at focus. Then the position of the object is at**
 a) focus
 b) infinity
 c) at 2f
 d) between f and 2f
6. **Power of a lens is $-4D$, then its focal length is**
 a) 4m
 b) $-40m$
 c) $-0.25 m$
 d) $-2.5 m$
7. **In a myopic eye, the image of the object is formed**
 a) behind the retina
 b) on the retina
 c) in front of the retina
 d) on the blind spot
8. **The eye defect 'presbyopia' can be corrected by**
 a) convex lens
 b) concave lens
 c) convex mirror
 d) Bi focal lenses
9. **Which of the following lens would you prefer to use while reading small letters found in dictionary?**
 a) A convex lens of focal length 5 cm
 b) A concave lens of focal length 5 cm
 c) A convex lens of focal length 10 cm
 d) A concave lens of focal length 10 cm
10. **If V_B, V_G, V_R be the velocity of blue, green and red light respectively in a glass prism, then which of the following statement gives the correct relation?**
 a) $V_B = V_G = V_R$
 b) $V_B > V_G > V_R$
 c) $V_B < V_G < V_R$
 d) $V_B < V_G > V_R$

Unit -3 THERMAL PHYSICS

1. **The value of universal gas constant**
 a) $3.81 \text{ Jmol}^{-1} \text{ K}^{-1}$
 b) $8.03 \text{ Jmol}^{-1} \text{ K}^{-1}$
 c) $1.38 \text{ Jmol}^{-1} \text{ K}^{-1}$
 d) $8.31 \text{ Jmol}^{-1} \text{ K}^{-1}$
2. **If a substance is heated or cooled, the change in mass of that substance is**
 a) positive
 b) negative
 c) zero
 d) none of the above
3. **If a substance is heated or cooled, the linear expansion occurs along the axis of**
 a) X or $-X$
 b) Y or $-Y$
 c) both (a) and (b)
 d) (a) or (b)
4. **Temperature is the average _____ of the molecules of a substance**
 a) difference in K.E and P.E
 b) sum of P.E and K.E
 c) difference in T.E and P.E
 d) difference in K.E and T.E
5. **In the Given diagram, the possible direction of heat energy transformation is**



Ans. a) $A \leftarrow B, A \leftarrow C, B \leftarrow C$

Unit - 4 ELECTRICITY

1. **Which of the following is correct?**
 a) Rate of change of charge is electrical power
 b) Rate of change of charge is current
 c) Rate of change of energy is current
 d) Rate of change of current is charge.
2. **SI unit of resistance is**
 a) mho
 b) joule
 c) ohm
 d) ohm meter
3. **In a simple circuit, why does the bulb glow when you close the switch?**
 a) The switch produces electricity.
 b) Closing the switch completes the circuit.
 c) Closing the switch breaks the circuit.
 d) The bulb is getting charged.
4. **Kilowatt hour is the unit of**
 a) resistivity
 b) conductivity
 c) electrical energy
 d) electrical power

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Unit - 5 ACOUSTICS

- When a sound wave travels through air, the air particles
 - vibrate along the direction of the wave motion
 - vibrate but not in any fixed direction
 - vibrate perpendicular to the direction of the wave motion
 - do not vibrate
- Velocity of sound in a gaseous medium is 330 ms^{-1} . If the pressure is increased by 4 times without causing a change in the temperature, the velocity of sound in the gas is
 - 330 ms^{-1}
 - 660 ms^{-1}
 - 156 ms^{-1}
 - 990 ms^{-1}
- The frequency, which is audible to the human ear is
 - 50 kHz
 - 20 kHz
 - 15000 kHz
 - 10000 kHz
- The velocity of sound in air at a particular temperature is 330 ms^{-1} . What will be its value when temperature is doubled and the pressure is halved?
 - 330 ms^{-1}
 - 165 ms^{-1}
 - $330 \times \sqrt{2} \text{ ms}^{-1}$
 - $320 / \sqrt{2} \text{ ms}^{-1}$
- If a sound wave travels with a frequency of $1.25 \times 10^4 \text{ Hz}$ at 344 m ms^{-1} , the wavelength will be
 - 27.52 m
 - 275.2 m
 - 0.02752 m
 - 2.752 m
- The sound waves are reflected from an obstacle into the same medium from which they were incident. Which of the following changes?
 - speed
 - frequency
 - wavelength
 - none of these
- Velocity of sound in the atmosphere of a planet is 500 ms^{-1} . The minimum distance between the sources of sound and the obstacle to hear the echo, should be
 - 17 m
 - 20 m
 - 25 m
 - 50 m

Unit - 6 NUCLEAR PHYSICS

- Man-made radioactivity is also known as _____
 - Induced radioactivity
 - Spontaneous radioactivity
 - Artificial radioactivity
 - a & c
- Unit of radioactivity is _____
 - roentgen
 - curie
 - becquerel
 - all the above
- Artificial radioactivity was discovered by _____
 - Bequerel
 - Irene Curie
 - Roentgen
 - Neils Bohr
- In which of the following, no change in mass number of the daughter nuclei takes place
 - α decay
 - β decay
 - γ decay
 - neutron decay
 - (i) is correct
 - (ii) and (iii) are correct
 - (i) & (iv) are correct
 - (ii) & (iv) are correct
- _____ isotope is used for the treatment of cancer.
 - Radio Iodine
 - Radio Cobalt
 - Radio Carbon
 - Radio Nickel
- Gamma radiations are dangerous because
 - it affects eyes & bones
 - it affects tissues
 - it produces genetic disorder
 - it produces enormous amount of heat
- _____ aprons are used to protect us from gamma radiations
 - Lead oxide
 - Iron
 - Lead
 - Aluminium
- Which of the following statements is/are correct?
 - α particles are photons
 - Penetrating power of γ radiation is very low
 - Ionization power is maximum for α rays
 - Penetrating power of γ radiation is very high
 - (i) & (ii) are correct
 - (ii) & (iii) are correct
 - (iv) only correct
 - (iii) & (iv) are correct
- Proton - Proton chain reaction is an example of _____
 - Nuclear fission
 - α - decay
 - Nuclear fusion
 - β - decay
- In the nuclear reaction $6X^{12} \alpha$ decay ZYA , the value of A & Z.
 - 8, 6
 - 8, 4
 - 4, 8
 - cannot be determined with the given data

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11. Kamini reactor is located at _____
 a. Kalpakkam b. Koodankulam c. Mumbai d. Rajasthan
12. **Which of the following is/are correct?**
 i. Chain reaction takes place in a nuclear reactor and an atomic bomb.
 ii. The chain reaction in a nuclear reactor is controlled
 iii. The chain reaction in a nuclear reactor is not controlled
 iv. No chain reaction takes place in an atom bomb
 a. (i) only correct **b. (i) & (ii) are correct**
 c. (iv) only correct d. (iii) & (iv) are correct

Unit - 7 ATOMS AND MOLECULES

1. **Which of the following has the smallest mass?**
 a. 6.023×10^{23} atoms of He **b. 1 atom of He**
 c. 2 g of He d. 1 mole atoms of He
2. **Which of the following is a triatomic molecule?**
 a. Glucose b. Helium **c. Carbon dioxide** d. Hydrogen
3. **The volume occupied by 4.4 g of CO_2 at S.T.P**
 a. 22.4 litre **b. 2.24 litre** c. 0.24 litre d. 0.1 litre
4. **Mass of 1 mole of Nitrogen atom is**
 a. 28 amu b. 14 amu c. 28 g **d. 14 g**
5. **Which of the following represents 1 amu?**
 a. Mass of a C-12 atom b. Mass of a hydrogen atom
c. $1/12^{th}$ of the mass of a C – 12 atom d. Mass of O – 16 atom
6. **Which of the following statement is incorrect?**
 a. **12 gram of C – 12 contains Avogadro's number of atoms.**
 b. One mole of oxygen gas contains Avogadro's number of molecules.
 c. One mole of hydrogen gas contains Avogadro's number of atoms.
 d. One mole of electrons stands for 6.023×10^{23} electrons.
7. **The volume occupied by 1 mole of a diatomic gas at S.T.P is**
 a. 11.2 litre b. 5.6 litre **c. 22.4 litre** d. 44.8 litre
8. **In the nucleus of $^{20}Ca_{40}$, there are**
 a. 20 protons and 40 neutrons **b. 20 protons and 20 neutrons**
 c. 20 protons and 40 electrons d. 40 protons and 20 electrons
9. **The gram molecular mass of oxygen molecule is**
 a. 16 g **b. 18 g** c. 32 g d. 17 g
10. **1 mole of any substance contains _____ molecules.**
 a. 6.023×10^{23} b. 6.023×10^{-23} c. 3.0115×10^{23} d. 12.046×10^{23}

Unit - 8 PERIODIC CLASSIFICATION OF ELEMENTS

1. **The number of periods and groups in the periodic table are _____.**
 a) 6, 16 b) 7, 17 c) 8, 18 **d) 7, 18**
2. **The basis of modern periodic law is _____.**
 a) atomic number b) atomic mass c) isotopic mass d) number of neutrons
3. **_____ group contains the member of halogen family.**
 a) 17^{th} b) 15^{th} c) 18^{th} d) 16^{th}
4. **_____ is a relative periodic property**
 a) atomic radii b) ionic radii c) electron affinity **d) electronegativity**

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- Chemical formula of rust is _____.
 a) $\text{FeO} \cdot x\text{H}_2\text{O}$ b) $\text{FeO}_4 \cdot x\text{H}_2\text{O}$ c) $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$ d) FeO
- In the aluminothermic process the role of Al is _____.**
 a) oxidizing agent b) reducing agent c) hydrogenating agent d) sulphurising agent
- The process of coating the surface of metal with a thin layer of zinc is called _____.**
 a) painting b) thinning c) galvanization d) electroplating
- Which of the following have inert gases 2 electrons in the outermost shell.**
 a) He b) Ne c) Ar d) Kr
- Neon shows zero electron affinity due to _____.**
 a) stable arrangement of neutrons b) stable configuration of electrons
 c) reduced size d) increased density
- _____ is an important metal to form amalgam.**
 a) Ag b) Hg c) Mg d) Al

Unit - 9 SOLUTION

- A solution is a _____ mixture.**
 a. homogeneous b. heterogeneous
 c. homogeneous and heterogeneous d. non homogeneous
- The number of components in a binary solution is _____.**
 a. 2 b. 3 c. 4 d. 5
- Which of the following is the universal solvent?**
 a. Acetone b. Benzene c. Water d. Alcohol
- A solution in which no more solute can be dissolved in a definite amount of solvent at a given temperature is called _____.**
 a. Saturated solution b. Un saturated solution
 c. Super saturated solution d. Dilute solution
- Identify the non aqueous solution.**
 a. sodium chloride in water b. glucose in water
 c. copper sulphate in water d. sulphur in carbon-di-sulphide
- When pressure is increased at constant temperature the solubility of gases in liquid _____.**
 a. No change b. increases c. decreases d. no reaction
- Solubility of NaCl in 100 ml water is 36 g. If 25 g of salt is dissolved in 100 ml of water how much more salt is required for saturation _____.**
 a. 12g b. 11g c. 16g d. 20g
- A 25% alcohol solution means**
 a. 25 ml alcohol in 100 ml of water b. 25 ml alcohol in 25 ml of water
 c. 25 ml alcohol in 75 ml of water d. 75 ml alcohol in 25 ml of water
- Deliquescence is due to _____.**
 a. Strong affinity to water b. Less affinity to water
 c. Strong hatred to water d. Inertness to water
- Which of the following is hygroscopic in nature?**
 a. ferric chloride b. copper sulphate penta hydrate c. silica gel d. none of the above

Unit - 10 TYPES OF CHEMICAL REACTIONS

- $\text{H}_2(\text{g}) + \text{Cl}_2(\text{g}) \rightarrow 2\text{HCl}(\text{g})$ is a**
 a. Decomposition Reaction b. Combination Reaction
 c. Single Displacement Reaction d. Double Displacement Reaction
- Photolysis is a decomposition reaction caused by _____.**
 a. heat b. electricity c. light d. mechanical energy

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- A reaction between carbon and oxygen is represented by $C_{(s)} + O_{2(g)} \rightarrow CO_{2(g)} + \text{Heat}$. In which of the type(s), the above reaction can be classified?
 - Combination Reaction
 - Combustion Reaction
 - Decomposition Reaction
 - Irreversible Reaction

a. i and ii b. i and iv c. i, ii and iii d. i, ii and iv
- The chemical equation $Na_2SO_{4(aq)} + BaCl_{2(aq)} \rightarrow BaSO_{4(s)} \downarrow + 2NaCl_{(aq)}$ represents which of the following types of reaction?

a. Neutralisation b. Combustion c. Precipitation d. Single displacement
- Which of the following statements are correct about a chemical equilibrium?
 - It is dynamic in nature
 - The rate of the forward and backward reactions are equal at equilibrium
 - Irreversible reactions do not attain chemical equilibrium
 - The concentration of reactants and products may be different

a. i, ii and iii b. i, ii and iv c. ii, iii and iv d. i, iii and iv
- A single displacement reaction is represented by $X_{(s)} + 2HCl_{(aq)} \rightarrow XCl_{2(aq)} + H_{2(g)}$. Which of the following(s) could be X.
 - Zn
 - Ag
 - Cu
 - Mg. Choose the best pair.

a. i and ii b. ii and iii c. iii and iv d. i and iv
- Which of the following is not an "element + element \rightarrow compound" type reaction?
 - $C_{(s)} + O_{2(g)} \rightarrow 2CO_{2(g)}$
 - $2K_{(s)} + Br_{2(l)} \rightarrow 2KBr_{(s)}$
 - $2CO_{(g)} + O_{2(g)} \rightarrow 2CO_{2(g)}$
 - $4Fe_{(s)} + 3O_{2(g)} \rightarrow 2Fe_2O_{3(s)}$
- Which of the following represents a precipitation reaction?
 - $A_{(s)} + B_{(s)} \rightarrow C_{(s)} + D_{(s)}$
 - $A_{(s)} + B_{(aq)} \rightarrow C_{(aq)} + D_{(l)}$
 - $A_{(aq)} + B_{(aq)} \rightarrow C_{(s)} + D_{(aq)}$
 - $A_{(aq)} + B_{(s)} \rightarrow C_{(aq)} + D_{(l)}$
- The pH of a solution is 3. Its $[OH^-]$ concentration is
 - 1×10^{-3} M
 - 3 M
 - 1×10^{-11} M
 - 11 M
- Powdered $CaCO_3$ reacts more rapidly than flaky $CaCO_3$ because of _____.
 - large surface area
 - high pressure
 - high concentration
 - high temperature

Unit - 11 CARBON AND ITS COMPOUNDS

- The molecular formula of an open chain organic compound is C_3H_6 . The class of the compound is
 - alkane
 - alkene
 - alkyne
 - alcohol
- The IUPAC name of an organic compound is 3-Methyl butan-1-ol. What type compound it is?
 - Aldehyde
 - Carboxylic acid
 - Ketone
 - Alcohol
- The secondary suffix used in IUPAC nomenclature of an aldehyde is _____.
 - ol
 - oic acid
 - al
 - one
- Which of the following pairs can be the successive members of a homologous series?
 - C_3H_8 and C_4H_{10}
 - C_2H_2 and C_2H_4
 - CH_4 and C_3H_6
 - C_2H_5OH and C_4H_8OH
- $C_2H_5OH + 3O_2 \rightarrow 2CO_2 + 3H_2O$ is a
 - Reduction of ethanol
 - Combustion of ethanol
 - Oxidation of ethanoic acid
 - Oxidation of ethanal
- Rectified spirit is an aqueous solution which contains about _____ of ethanol
 - 95.5 %
 - 75.5 %
 - 55.5 %
 - 45.5 %
- Which of the following are used as anaesthetics?
 - Carboxylic acids
 - Ethers
 - Esters
 - Aldehydes
- TFM in soaps represents _____ content in soap
 - mineral
 - vitamin
 - fatty acid
 - carbohydrate

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9. *Which of the following statements is wrong about detergents?*
 a. It is a sodium salt of long chain fatty acids
 b. It is sodium salts of sulphonic acids
 c. The ionic part in a detergent is $\text{SO}_3\text{-Na}^+$
 d. It is effective even in hard water.

Unit - 12 PLANT ANATOMY AND PLANT PHYSIOLOGY

1. *Casparian strips are present in the _____ of the root.*
 a) cortex b) pith c) pericycle d) endodermis
2. *The endarch condition is the characteristic feature of*
 a) root b) stem c) leaves d) flower
3. *The xylem and phloem arranged side by side on same radius is called _____*
 a) radial b) amphivasal c) conjoint d) None of these
4. *Which is formed during anaerobic respiration?*
 a) Carbohydrate b) Ethyl alcohol c) Acetyl CoA d) Pyruvate
5. *Kreb's cycle takes place in*
 a) chloroplast b) mitochondrial matrix c) stomata d) inner mitochondrial membrane
6. *Oxygen is produced at what point during photosynthesis ?*
 a) when ATP is converted to ADP b) when CO_2 is fixed
 c) when H_2O is splitted d) All of these

Unit - 13 STRUCTURAL ORGANISATION OF ANIMALS

1. *In leech locomotion is performed by*
 a) Anterior sucker b) Parapodia c) Setae d) Contraction and relaxation of muscles
2. *The segments of leech are known as*
 a) Metameres (somites) b) Proglottids c) Strobila d) All the above
3. *Pharyngeal ganglion in leech is a part of*
 a) Excretory system b) Nervous system c) Reproductive system d) Respiratory system
4. *The brain of leech lies above the*
 a) Mouth b) Buccal Cavity c) Pharynx d) Crop
5. *The body of leech has*
 a) 23 segments b) 33 segments c) 38 segments d) 30 segments
6. *Mammals are _____ animals.*
 a) Cold blooded b) Warm blooded c) Poikilothermic d) All the above

Unit - 14 TRANSPORTATION IN PLANTS AND CIRCULATION IN ANIMALS

1. *Active transport involves*
 a) movement of molecules from lower to higher concentration
 b) expenditure of energy
 c) it is an uphill task
 d) all of the above
2. *Water which is absorbed by roots is transported to aerial parts of the plant through*
 a) cortex b) epidermis c) phloem d) xylem
3. *During transpiration there is loss of*
 a) carbon dioxide b) oxygen c) water d) none of the above
4. *Root hairs are*
 a) cortical cell b) projection of epidermal cell c) unicellular d) both b and c
5. *Which of the following process requires energy?*
 a) active transport b) diffusion c) osmosis d) all of them
6. *The wall of human heart is made of*
 a) Endocardium b) Epicardium c) Myocardium d) All of the above

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7. **Which is the correct sequence of blood flow**
 a) ventricle → atrium → vein → arteries b) atrium → ventricle → veins → arteries
 c) atrium → ventricle → arteries → vein d) ventricles → vein → atrium → arteries
8. **A patient with blood group O was injured in an accident and has blood loss. Which group of blood should be used by doctor for transfusion?**
 a) O group b) AB group c) A or B group d) all blood group
9. **'Heart of heart' is called**
 a) SA node b) AV node c) Purkinje fibres d) Bundle of His
10. **Which one of the following shows correct composition of blood**
 a) Plasma - Blood + Lymphocyte b) Serum - Blood + Fibrinogen
 c) Lymph - Plasma + RBC + WBC d) **Blood - Plasma + RBC + WBC + Platelets**

Unit - 15 NERVOUS SYSTEM

1. **Bipolar neurons are found in**
 (a) retina of eye (b) cerebral cortex (c) embryo (d) respiratory epithelium
2. **Site for processing of vision, hearing, memory, speech, intelligence and thought is**
 (a) kidney (b) ear (c) **brain** (d) lungs
3. **In reflex action, the reflex arc is formed by**
 (a) brain, spinal cord, muscle (b) **receptor, muscle, spinal cord**
 (c) muscle, receptor, brain (d) receptor, spinal cord, muscle
4. **Dendrites transmit impulse cell body and axon transmits impulse cell body.**
 (a) away from, away from (b) **towards, away from**
 (c) towards, towards (d) away from, towards
5. **The outer most of the three cranial meninges is**
 (a) arachnoid membrane (b) piamater (c) **duramater** (d) myelin sheath
6. **There are pairs of cranial nerves and pairs of spinal nerves.**
 (a) **12, 31** (b) 31, 12 (c) 12, 13 (d) 12, 21
7. **The neurons which carries impulse from the central nervous system to the muscle fibre.**
 (a) afferent neurons (b) association neuron (c) **efferent neuron** (d) unipolar neuron
8. **Which nervous band connects the two cerebral hemispheres of brain?**
 (a) thalamus (b) hypothalamus (c) **corpus callosum** (d) pons
9. **Node of Ranvier is found in**
 (a) muscles (b) **axons** (c) dendrites (d) cyton
10. **Vomiting centre is located in**
 (a) **medulla oblongata** (b) stomach (c) cerebrum (d) hypothalamus
11. **Nerve cells do not possess**
 (a) neurilemma (b) **sarcolemma** (c) axon (d) dendrites
12. **A person who met with an accident lost control of body temperature, water balance, and hunger. Which of the following part of brain is supposed to be damaged?**
 (a) Medulla oblongata (b) cerebrum (c) pons (d) **hypothalamus**

Unit - 16 PLANT AND ANIMAL HORMONES

1. **Gibberellins cause:**
 a) Shortening of genetically tall plants b) Elongation of dwarf plants
 c) **Promotion of rooting** d) Yellowing of young leaves
2. **The hormone which has positive effect on apical dominance is:**
 a) Cytokinin (b) **Auxin** c) Gibberellin d) Ethylene
3. **Which one of the following hormones is naturally not found in plants:**
 a) **2, 4-D** b) GA3 c) Gibberellin d) IAA

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4. *Avena coleoptile test was conducted by*
 a) Darwin b) N. Smit c) Paal d) **F.W. Went**
5. *LH is secreted by*
 a) Adrenal gland b) Thyroid gland c) **Anterior pituitary** d) Hypothalamus.
6. *Identify the exocrine gland*
 a) Pituitary gland b) Adrenal gland c) **Salivary gland** d) Thyroid gland
7. *Which organ acts as both exocrine gland as well as endocrine gland*
 a) **Pancreas** b) Kidney c) Liver d) Lungs
8. *Which one is referred as "Master Gland"?*
 a) Pineal gland b) **Pituitary gland** c) Thyroid gland d) Adrenal gland

Unit - 17 REPRESENTATION IN PLANTS AND ANIMALS

1. *The plant which propagates with the help of its leaves is _____.*
 a) Onion b) Neem c) Ginger d) **Bryophyllum**
2. *Asexual reproduction takes place through budding in _____.*
 a) Amoeba b) **Yeast** c) Plasmodium d) Bacteria
3. *Syngamy results in the formation of _____.*
 a) Zoospores b) Conidia c) **Zygote** d) Chlamydozoospores
4. *The essential parts of a flower are _____.*
 a) Calyx and Corolla b) Calyx and Androecium
 c) Corolla and Gynoecium d) **Androecium and Gynoecium**
5. *Anemophilous flowers have _____.*
 a) Sessile stigma b) Small smooth stigma c) Colored flower d) **Large feathery stigma**
6. *Male gametes in angiosperms are formed by the division of _____.*
 a) **Generative cell** b) Vegetative cell c) Microspore mother cell d) Microspore
7. *What is true of gametes?*
 a) They are diploid b) They give rise to gonads
 c) They produce hormones d) **They are formed from gonads**
8. *A single highly coiled tube where sperms are stored, get concentrated and mature is known as*
 a) **Epididymis** b) Vasa efferentia c) Vas deferens d) Seminiferous tubules
9. *The large elongated cells that provide nutrition to developing sperms are*
 a) Primary germ cells b) **Sertoli cells** c) Leydig cells d) Spermatogonia
10. *Estrogen is secreted by*
 a) Anterior pituitary b) Primary follicle c) **Graffian follicle** d) Corpus luteum
11. *Which one of the following is an IUCD?*
 a) **Copper – T** b) Oral pills c) Diaphragm d) Tubectomy

Unit - 18 GENETICS

1. *According to Mendel alleles have the following character*
 a) **Pair of genes** b) Responsible for character
 c) Production of gametes d) Recessive factors
2. *9 : 3 : 3 : 1 ratio is due to*
 a) Segregation b) Crossing over c) **Independent assortment** d) Recessiveness
3. *The region of the chromosome where the spindle fibres get attached during cell division*
 a) Chromomere b) Centrosome c) **Centromere** d) Chromonema
4. *The centromere is found at the centre of the _____ chromosome.*
 a) Telocentric b) **Metacentric** c) Sub-metacentric d) Acrocentric

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- The _____ units form the backbone of the DNA.*
 a) 5 carbon sugar b) Phosphate c) Nitrogenous bases d) Sugar phosphate
- Okasaki fragments are joined together by _____.*
 a) Helicase b) DNA polymerase c) RNA primer d) DNA ligase
- The number of chromosomes found in human beings are _____.*
 a) 22 pairs of autosomes and 1 pair of allosomes.
 b) 22 autosomes and 1 allosome c) 46 autosomes
 d) 46 pairs autosomes and 1 pair of allosomes.
- The loss of one or more chromosome in a ploidy is called _____.*
 a) Tetraploidy b) Aneuploidy c) Euploidy d) polyploidy

Unit - 19 ORIGIN AND EVOLUTION OF LIFE

- Biogenetic law states that _____.*
 a. Ontogeny and phylogeny go together b. Ontogeny recapitulates phylogeny
 c. Phylogeny recapitulates ontogeny
 d. There is no relationship between phylogeny and ontogeny
- The 'use and disuse theory' was proposed by _____.*
 a. Charles Darwin b. Ernst Haeckel c. Jean Baptiste Lamarck d. Gregor Mendel
- Paleontologists deal with _____.*
 a. Embryological evidences b. Fossil evidences
 c. Vestigial organ evidences d. All the above
- The best way of direct dating fossils of recent origin is by _____.*
 a. Radio-carbon method b. Uranium lead method
 c. Potassium-argon method d. Both (a) and (c)
- The term Ethnobotany was coined by _____.*
 a. Khorana b. J.W. Harsberger c. Ronald Ross d. Hugo de Vries

Unit - 20 BREEDING AND BIOTECHNOLOGY

- Which method of crop improvement can be practised by a farmer if he is inexperienced?*
 a. clonal selection b. mass selection c. pureline selection d. hybridization
- Pusa Komal is a disease resistant variety of _____.*
 a. sugarcane b. rice c. cow pea d. maize
- Himgiri developed by hybridisation and selection for disease resistance against rust pathogens is a variety of _____.*
 a. chilli b. maize c. sugarcane d. wheat
- The miracle rice which saved millions of lives and celebrated its 50th birthday is _____.*
 a. IR 8 b. IR 24 c. Atomita 2 d. Ponni
- Which of the following is used to produce products useful to humans by biotechnology techniques?*
 a. enzyme from organism b. live organism c. vitamins d. both (a) and (b)
- We can cut the DNA with the help of _____.*
 a. scissors b. restriction endonucleases c. knife d. RNAase
- rDNA is a _____.*
 a. vector DNA b. circular DNA
 c. recombinant of vector DNA and desired DNA d. satellite DNA
- DNA fingerprinting is based on the principle of identifying _____ sequences of DNA.*
 a. single stranded b. mutated c. polymorphic d. repetitive

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9. *Organisms with modified endogenous gene or a foreign gene are also known as*
 (a) transgenic organisms (b) genetically modified (c) mutated (d) both a and b
10. *In a hexaploid wheat ($2n=6x=42$) the haploid (n) and the basic(x) number of chromosomes respectively are*
 a. $n = 7$ and $x = 21$ b. $n = 21$ and $x = 21$ c. $n = 7$ and $x = 7$ d. $n = 21$ and $x = 7$

Unit - 21 HEALTH AND DISEASES

- Tobacco consumption is known to stimulate secretion of adrenaline. The component causing this could be*
 a) Nicotine b) Tannic acid c) Curcumin d) Leptin
 - World 'No Tobacco Day' is observed on*
 a) May 31 b) June 6 c) April 22 d) October 2
 - Cancer cells are more easily damaged by radiations than normal cells because they are*
 a) Different in structure b) Non-dividing c) Mutated Cells d) Undergoing rapid division
 - Which type of cancer affects lymph nodes and spleen?*
 a) Carcinoma b) Sarcoma c) Leukemia d) Lymphoma
 - Excessive consumption of alcohol leads to*
 a) Loss of memory b) Cirrhosis of liver
 c) State of hallucination d) Suppression of brain function
 - Coronary heart disease is due to*
 a) Streptococci bacteria b) Inflammation of pericardium
 c) Weakening of heart valves d) Insufficient blood supply to heart muscles
 - Cancer of the epithelial cells is called*
 a) Leukemia b) Sarcoma c) Carcinoma d) Lipoma
 - Metastasis is associated with*
 a) Malignant tumour b) Benign tumour c) Both (a) and (b) d) Crown gall tumour
 - Polyphagia is a condition seen in*
 a) Obesity b) Diabetes mellitus c) Diabetes insipidus d) AIDS
 - Where does alcohol effect immediately after drinking?*
 a) Eyes b) Auditory region c) Liver d) Central nervous system
1. Communicable: AIDS: Non communicable : Obesity .
 2. Chemotherapy: Chemicals: Radiation therapy: Radiation .
 3. Hypertension: Hypercholesterolemia: Glycosuria: Polyphagia .

Unit - 22 ENVIRONMENTAL MANAGEMENT

- Which of the following is / are a fossil fuel?*
 i. Tar ii. Coal iii. Petroleum
 a) i only b) i and ii c) ii and iii d) i, ii and iii
- What are the steps will you adopt for better waste management?*
 a) reduce the amount of waste formed b) reuse the waste
 c) recycle the waste d) all of the above
- The gas released from vehicles exhaust are*
 i. carbon monoxide ii. Sulphur dioxide iii. Oxides of nitrogen
 a) i and ii b) i and iii c) ii and iii d) i, ii and iii
- Soil erosion can be prevented by*
 a) deforestation b) afforestation c) over growing d) removal of vegetation

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5. **A renewable source of energy is**
 a) petroleum b) coal c) nuclear fuel d) trees
6. **Soil erosion is more where there is**
 a) no rain fall b) low rainfall c) rain fall is high d) none of these
7. **An inexhaustible resources is**
 a) wind power b) soil fertility c) wild life d) all of the above
8. **Common energy source in village is**
 a) electricity b) coal c) biogas d) wood and animal dung
9. **Green house effect refers to**
 a) cooling of earth b) trapping of UV rays
 c) cultivation of plants d) warming of earth
10. **A cheap, conventional, commercial and inexhaustible source of energy is**
 a) hydropower b) solar energy c) wind energy d) thermal energy
11. **Global warming will cause**
 a) raise in level of oceans b) melting of glaciers c) sinking of islands d) all of these
12. **Which of the following statement is wrong with respect to wind energy**
 a) wind energy is a renewable energy
b) the blades of wind mill are operated with the help of electric motor
 c) production of wind energy is pollution free
 d) usage of wind energy can reduce the consumption of fossil fuels

Unit - 23 VISUAL COMMUNICATION

1. **Which software is used to create animation ?**
 a) Paint b) PDF c) MS Word d) Scratch
2. **All files are stored in the _____**
 a) Folder b) box c) Pai d) scanner
3. **Which is used to build scripts?**
 a) Script area b) Block palette c) stage d) sprite
4. **Which is used to edit programs?**
 a) Inkscape b) script editor c) stage d) sprite
5. **Where you will create category of blocks?**
 a) Block palette b) Block menu c) Script area d) sprite