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| Biology----------------------------------------------------------------------------------- |
| The chemical formula of uric acid is: |
| Answer: C. C₅O₃N₄H₄ |
| How many metacarpals are present in a lower limb of human being? |
| Answer: Metacarpals are in the hand; lower limbs have metatarsals |
| Cardiac muscles are: |
| Answer: Involuntary and striated |
| The supply line between embryo and mother is: |
| Answer: Umbilical cord |
| Which of the following disease if not treated can cause blindness in newborn? |
| Answer: Gonorrhea |
| The sperms are stored in: |
| Answer: Epididymis |
| Exchange of genetic material takes place in: |
| Answer: Pachytene |
| The genotype of Turner’s syndrome patient is: |
| Answer: XO |
| Conception in human female takes place at: |
| Answer: Fallopian tube |
| Which secretion neutralizes the acidity of urethra? |
| Answer: Semen |
| The example of gliding joints is: |
| Answer: A. Ankle and wrist |
| The intramuscular injection at hip must be injected in: |
| Answer: Outer and upper quadrant |
| Abductor muscles allow the arm to: |
| Answer: Away from the body |
| Renal vessels leave the kidney at: |
| Answer: Hilus |
| Urine contains urea in concentration of about: |
| Answer: 0.3–0.7% |
| If a colour blind person marries a homozygous normal female, what are the chances of sons to be colour blind? |
| Answer: None of these |
| The largest part of forebrain is: |
| Answer: Cerebrum |
| The chemical attractant which directs the pollen tube to enter the ovary through micropyle is: |
| Answer: Calcium |
| Alpha cells of pancreas secrete: |
| Answer: Glucagon |
| The physiological or functional contact between two neurons is called: |
| Answer: Synapses |
| All are bones of axial skeleton EXCEPT: |
| Answer: Scapula |
| Sliding filament theory of muscle contraction was given by: |
| Answer: Huxley |
| The process of hemodialysis takes about: |
| Answer: 6–10 hrs |
| What is the connection between renal pelvis and urinary bladder? |
| Answer: Ureter |
|  |
| Thermoregulation in mammals that lack sweat glands is done by: |
| Answer: Panting |
| The process in which fruit formation takes place without the formation of seeds is called: |
| Answer: Parthenocarpy |
| Every statement is true about fraternal twins EXCEPT: |
| Answer: The genotype of each zygote is same |
| About urethra, each statement is correct EXCEPT: |
| Answer: Contains prostatic gland at its tip |
| About menstruation phase: pick the odd one out: |
| Answer: Blood and myometrium flows out through vagina |
| Amitosis takes place in: |
| Answer: Bacterial cells |
| Elastic collision involves: |
| Answer: C. No gain and no loss of energy |
| Natural gas contains about: |
| Answer: A. 80% methane |
| Homophilla is a disorder in which blood falls to clot a male hemophilia marries sara is a normal women and together they have four children two boys Ahmed and Ali and two girls (Alia and Ayesha). Nono of the children display the symptoms of homophilia. Ahmed, Ali, Ayesha and Alia all marry normal individuals and have children. None of Ahmed's or Ali's children, male or female, display symptoms of homophilia, but the sons of Alia and Ayesha display symptoms of homophilia while the daughters of Alia and Ayesha do not. |
| If one of Ali's daughters marries a normal man, what is the probability that one of their children will display symptoms of hemophilia? Answer: 25% |
| Which of the following individuals are heterozygous for hemophilia? Answer: Alia and Ayesha |
| The propulsive movement of the gastrointestinal tract (GI tract) is: Answer: Peristalsis |
| The Calvin Cycle consists of main reactions: Answer: 3 |
| Identify the incorrect statement about the Bathyal zone: Answer: It ranges from surface to depth of about 2000 metres |
| Deamination in the liver initially produces: Answer: Ammonia |
| The causes of cyanosis include: Answer: Ventricular septum defect |
| The prolactin hormone responsible for the activation of mammary glands to start producing milk is a hormone of: Answer: Pituitary gland |
| Which of the following would be most likely to occur in an ecosystem: Answer: As the number of prey decreases, the number of predators decrease |
| The law of dominance is illustrated in the garden pea by: Answer: Homozygous tall × heterozygous tall |
| Identify the incorrect statement about Charles Darwin’s theory: Answer: Intra specific competition occurs between different species and inter-specific competition occurs among the individuals in a species |
| Identify the incorrect statement from the following: Answer: Xylem is situated on the outer side of the cambium ring and the phloem on the inner side |
| Proteins float in membrane like iceberg in sea: Answer: Fluid mosaic model |
| In the Hardy-Weinberg principle, p² + 2pq + q² = 1, q² represents the frequency of the: Answer: Homozygous recessive |
| Fungi do not contain: Answer: Chlorophyll |
| In a typical nucleotide the nitrogenous base is attached to carbon \_\_ of pentose: Answer: 1st |
| Binomial nomenclature was first proposed by: Answer: Carolus Linnaeus (1707) |
| \_\_ causes amoebic dysentery in humans: Answer: Entamoeba histolytica |
| The main process that occurs in the dark reaction in photosynthesis is: Answer: That carbon dioxide is fixed |
| \_\_ is commonly known as hookworm: Answer: Ancylostoma duodenale |
| The Latin words of the name given to a human being, Homo sapiens, include the: Answer: Genus and species |
| In paper chromatography xanthophylls will give color: Answer: Orange |
| Which of the following bones are present in the palm of hand: Answer: Metacarpals |
| Which biome contains maples, oaks, and bears: Answer: Deciduous forest |
| The major sign and symptom of microcephaly is: Answer: Small skull in proportion to the normal body size |
| The reaction involved in chemotropic nutrition is: Answer: NH₄ + 3O₂ → 2NO₂ + 2H₂O + 4H⁺ + energy |
| The muscles attached to the bones are: Answer: Voluntary and striated |
| An organism appears to be a segmented worm. Upon observation it is determined that the organism has a closed circulation, a mouth and an anus and does not have an exoskeleton. The organism most likely belongs to the phylum: Answer: Annelida |
| Which of the following fungus is utilized in the baking industry? Answer: Yeast |
| When equilibrium was attained, the concentration was [A][B] = 4 mol/dm³ and [C] = 6 mol/dm³. The equilibrium constant Ke of this reaction is: Answer: 3.75 |
| If the ratio of initial concentration of the reagents is greater than the Kc, then: Answer: The reaction will shift towards the reverse direction |
| Aqueous solution of Na₂CO₃ is: Answer: Alkaline |
| Which of the following is included in Bryophytes? Answer: Mosses |
| Species of phylum Platyhelminthes are: Answer: Flat worms |
| A characteristic feature of Echinoderms is: Answer: Water vascular system |
| The light-dependent reaction of photosynthesis occurs in: Answer: Thylakoid membrane of chloroplast |
| The end product of glycolysis is: Answer: Pyruvate |
| A psychological condition usually seen in girls and young women with loss of appetite is: Answer: Anorexia Nervosa |
| Hemoglobin carries more oxygen than plasma by: Answer: 70 times |
| Bones of the skull are joined by: Answer: Fixed joints |
| Cytoplasmic localization is a consequence of: Answer: Fertilization |
| Malpighian tubules are involved in excretion in: Answer: Cockroach |
| Growth movement caused in response to gravitational stimulus is called: Answer: Geotropism |
| Highly condensed portions of the chromatin are called: Answer: Heterochromatin |
| The disease in which patients pass urine that rapidly turns black on exposure to air is called: Answer: Alkaptonuria |
| Diplotene is the sub-stage of: Answer: Prophase I |
| Deficient production of hormones by adrenal glands results in: Answer: Addison's disease |
| Amniocentesis is performed between the: Answer: 16th and 18th week of gestation |
| Lamarck's theory is based on all of the following points EXCEPT: Answer: Natural selection |
| All of the following are sexually transmitted diseases except: Answer: Alzheimer's Disease |
| The producers of pond ecosystem include: Answer: Phytoplankton |
| Erythroblastosis fetalis occurs when: Answer: Mother is Rh negative and baby is Rh positive |
| In pea plants, what percentage of the generation are recombinants in a cross between RrYy × rryy? Answer: 25% |
| Chickenpox is caused by: Answer: Varicella zoster |
| Lysosomes function in: Answer: Intracellular digestion |
| The viruses are: Answer: Non-cellular |
| Bacterial pili help in: Answer: Conjugation |
| Trypanosoma belongs to class: Answer: Flagellata |
| A bacteriophage consists solely of: Answer: DNA and protein |
| Which of the following factors affect enzyme activity? Answer: All of the above (Temperature, pH, Concentration of substrate, Radiation) |
| The secondary and tertiary consumers are also known as: Answer: Carnivores |
| Plants absorb it in the form of soluble phosphates. It is present abundantly in growing and storage organs of plants. What is it? Answer: P (Phosphorus) |
| Pharynx leads air through glottis into: Answer: Trachea |
| The concentration of Na⁺ ions in the body fluids is controlled by which hormone? Answer: Aldosterone |
| The movement of plants in response to touch stimuli is: Answer: Thigmotropism |
| The number of muscles in a human body is about: Answer: 600 |
| An enzyme increases the speed of a reaction: Answer: By lowering activation energy requirements |
| Lysosomes are also called: Answer: Suicide sacs |
| Closely related species are grouped together into: Answer: Families |
| The cell wall of most bacteria has a unique macromolecule called: Answer: Peptidoglycan |
| All of the following organisms belong to the kingdom Protista EXCEPT: Answer: Common Molds |
| Parasitic fungi absorb nutrients directly from the living host with the help of special hyphal tips called: Answer: Haustoria |
| The botanical name of Imli is: Answer: Tamarindus indica |
| Which one is not a group of Gymnosperm? Answer: Musci |
| The process of replacing or supplementing a defective allele with a functional one is known as: Answer: Gene therapy |
| Germ cells give rise to: Answer: Eggs and sperms |
| What was the percentage of guanine in DNA if adenine comprised 36%? Answer: 14% |
| Which one of the following is a fish? Answer: Sea horse |
| These three reactions collectively constitute: Answer: Glycolysis |
| The genotype of a normal male in humans is: Answer: 44+XY |
| Savannah is an example of which type of ecosystem? Answer: Tropical grassland |
| In cats with co-dominant coat color genes on X chromosomes, what is the F2 phenotypic ratio? Answer: 1 black male: 1 ginger male: 2 tortoise-shell females |
| The region where the impulse moves from one neuron to another is called: Answer: Synapse |
| What causes an increase in pressure in the ventricles of the heart? Answer: The closing of all the heart valves |
| The combination of XXY (47) chromosomes results in: Answer: Klinefelter’s Syndrome |
| A bean seed contains all of the following except: Answer: A hypha |
| The reconstruction of a lost part of the body is called: Answer: Regeneration |
| Fern has how many pairs of chromosomes? Answer: 500 |
| The diagram shows a simplified nitrogen cycle. Answer: Nitrogen fixation by root nodule bacteria |
| In the commercial manufacture of insulin, a human gene is inserted into which of these? Answer: The DNA of a bacterium |
| The diagram shows a model to demonstrate the mass flow hypothesis of translocation. Answer: From Y to Z |
| Many scientists believe that one of the following is/are evolutionary origin(s) of animals, plants and fungi? Answer: Protists |
| In the human body, blood circulating from the gut to the heart passes through the: Answer: Liver |
| The diagram shows the four types of human teeth. Which teeth are used for cutting? Answer: Incisors |
| Functions of motor, sensory and interneurons in a reflex response? Answer: Sensory: to conduct from receptor to CNS; Motor: to conduct to effector; Interneuron: connect within CNS |
| What substance is not found in the liquid at X in a healthy person? Answer: Toxins |
| Reproduction of sea urchins is: Answer: Sexual reproduction which results in genetically dissimilar offspring |
| Which vertebrate groups have scaly skin? Answer: Fish and reptiles |
| Enzyme and product in starch digestion: Answer: Amylase → Maltose |
| Archaeopteryx is a transitional stage between: Answer: Reptile and bird |
| In Krebs cycle, substrate-level phosphorylation accompanies formation of: Answer: Succinate |
| Knee-jerk reflex response: Answer: Muscles in the front of the thigh are contracting and muscles in the back are relaxing |
| Incorrectly paired one: Answer: Virchow — mosaic model of plasma membrane |
| Phylum with bilateral larva and radial adult symmetry: Answer: Echinodermata |
| Botanical name of gum tree: Answer: Acacia nilotica |
| Type of inheritance illustrated: Answer: Gene linkage of P and Q |
| How many metacarpals are in the hand? Answer: 5 |
| NOT a difference between prokaryotic and eukaryotic cell: Answer: Presence or absence of nucleus, cell wall, and membrane-bound organelles |
| An enzyme without its non-protein part is called: Answer: Apoenzyme |
| Phases of mitosis and events: Answer: Interphase: DNA replicates, Prophase: Spiralization, Metaphase: Centromeres attach to spindle, Anaphase: Centromeres split, Telophase: Hydration |
| In the uterus, what carries oxygen from the placenta? Answer: The umbilical cord |
| Floral formula of Mimosaceae: Answer: K(5) C1+2+(2), A(9)+1, G1 |
| Which type of protein structure contains the 3D shape? Answer: Tertiary |
| Movements involved in breathing out: Answer: Ribs down and in, diaphragm upwards |
| Diploid number of the organism: Answer: 40 |
| Effect of non-competitive inhibitor on enzyme 2: Answer: Substance Y would no longer be formed |
| Processes essential to make nitrogen in dead plants available to growing ones: Answer: Ammonification, deamination, nitrification |
| In osmosis diagram, what is the direction of water movement? Answer: Overall, water moves from right to left |
| If we take 2.2 grams of nitrogen in ammonia and 0.03 gram atoms of sulfur, then the molar ratio of C, N, and O atoms is: |
| Answer: B. 5:1:2 |
| A system at equilibrium can be disturbed by: |
| Answer: D. All of the above (Concentration change, Pressure change, Temperature) |
| In the commercial manufacture of insulin, a human gene is inserted into which of these? |
| Answer: C. the DNA of a bacterium |
| In a plant, what are the structures W, X, Y, and Z and what is the direction of flow of solution along W? |
| Answer: B. 2 and 3 |
| What are the functions of the inter, motor, and sensory neurons in a reflex response? |
| Answer: A. To conduct impulses from the receptor to the central nervous system |
| Male and female sea urchins release their sperm and eggs into the water where fertilization takes place. How can their reproduction be described? |
| Answer: C. sexual reproduction which results in genetically dissimilar offspring |
| Which vertebrate groups have scaly skin? |
| Answer: D. fish and reptiles |
| What is the enzyme and the product in the following reaction in the human alimentary canal: enzyme starch → starch enzyme products? |
| Answer: A. amylase, maltose |
| Which of the following is incorrectly paired? |
| Answer: A. glucose - energy |
| How many metacarpals are present in the hand? |
| Answer: D. 5 |
| Some enzymes require the presence of a nonprotein molecule for catalysis. An enzyme devoid of this molecule is called: |
| Answer: B. apoenzyme |
| The events shown below occur during different phases of mitosis: I. spiralization of DNA II. hydration of DNA III. centromeres split IV. centromeres attach to spindle fibers V. DNA replicates. Which one of the following correctly identifies each of the phases? |
| Answer: V (Interphase), II (Prophase), IV (Metaphase), III (Anaphase), I (Telophase) |
| When a fetus is in the uterus, what carries oxygen away from the placenta? |
| Answer: D. The umbilical cord |
| The floral formula of the family Mimosaceae is: |
| Answer: C. K(5) C1+2+(2), A(9)+1, G1 |
| Which type of protein structure contains the three-dimensional structure? |
| Answer: C. tertiary |
| Which of the following describes the movements involved in breathing out? |
| Answer: A. down and in (movements of ribs), downwards (movement of diaphragm) |
| The diagram shows a cell of an organism formed by reduction division. What is the diploid number for this organism? |
| Answer: B. 12 |
| Which processes are essential in making nitrogen in dead plant material available to growing plants? |
| Answer: A. I, II and III only (Ammonification, Deamination, Nitrification) |
| The diagram represents two liquids, separated by a membrane through which osmosis can occur. What movement of molecules will occur? |
| Answer: C. Overall, water molecules move from left to right. |
| The first cell to contain the diploid number of chromosomes is: Answer: C. Zygote |
| A female gamete containing the monoploid (haploid) number of chromosomes is: Answer: D. Ovum |
| An anti codon is the sequence of the nitrogenous bases on the: Answer: D. tRNA molecule which recognizes the appropriate sequence of bases on the mRNA |
| Flower colour is controlled by a single pair of alleles. The allele for red flowers is dominant to the allele for white flowers. A plant homozygous for red flowers is crossed with a plant homozygous for white flowers. All the resulting plants have red flowers (F1 generation). When the F1 generation are crossed with each other, 18 plants are obtained. 12 plants have red flowers and 6 have white flowers (F2 generation). What ratio is expected in the F2 generation and what ratio has been obtained? Answer: C. Expected ratio red to white 3:1, obtained ratio red to white 2:1 |
| The following observations refer to evolution: I. Inherited variations which are 'favoured in a particular environment are passed on. II. There is a struggle for existence. III. In time, favoured inherited variations may accumulate causing gradual changes in the organism. IV. Although populations tend to overproduce, they remain more or less constant in numbers from generation to generation. In what sequence should the statements be placed to support Darwin's theory of evolution? Answer: A. I, II, III, IV |
| Joints found at the vertebrae are: Answer: C. Partially moveable joints |
| How many meninges cover the human brain? Answer: C. 3 |
| By which process is water lost from a leaf? Answer: D. Transpiration |
| Which of the following statements concerning nucleolus is correct? Answer: A. It disappears at the time of cell division. |
| In birds, the male is the homogametic sex. A male bird showing the recessive trait was mated with a female showing the dominant trait of a characteristic governed by a pair of alleles which are sex-linked. What is the probability that the male offspring will show the dominant trait? Answer: C. 0.50 |
| The gland known as the "gland of emergency" is the: Answer: B. Adrenal |
| The autonomic nervous system controls all of the following activities except: Answer: D. Thought |
| At what point are two populations descending from the same ancestral stock considered separate species? Answer: A. When they can no longer produce viable, fertile offspring |
| The correct order of arthropod groups, from those with most legs to those with fewest legs, is: Answer: B. Crustaceans... Myriapods... Insects... Arachnids |
| At the northern hemisphere, a tundra type of growth: Answer: C. Lasts only for two to three months |
| The number of nucleotides containing guanine in Strand 1: |
| Answer: Based on the table provided, the number of guanine bases in Strand 1 is not directly given, but it can be deduced from the total length of the DNA and the relationship between the different bases. However, you may need to fill in the exact numbers if you can determine how many guanine bases there are from the provided data. |
| If uncertainty in the position of an electron is zero, the uncertainty in its momentum is: |
| Answer: E. infinite. This is a reference to Heisenberg's Uncertainty Principle, which states that if the position of a particle is known exactly, the uncertainty in its momentum becomes infinitely large. |
| In the simplified nitrogen cycle, decomposition starts during: |
| Answer D. death and decay. This stage involves the breakdown of organic matter by decomposers, returning nitrogen to the soil. |
| Antheridia and archegonia are organs in bryophytes: |
| Answer. reproductive. These are reproductive organs in non-vascular plants like mosses. |
| Which of the following statements is true about savannah? |
| Answer: E. evaporation exceeds rainfall. This is characteristic of savannah ecosystems, which typically experience a long dry season and a shorter rainy season. |
| What happens to the volume of the thorax and the air pressure in the lungs during breathing in? |
| Answer: Increases, decreases. During inhalation, the volume of the thorax increases, and the air pressure in the lungs decreases, causing air to flow into the lungs. |
| The following statements are about enzymes: |
| Answer: The correct statements are: |
| They are globular proteins. |
| They can be inhibited by competitive inhibitors. |
| The other statements are incorrect for all enzymes. |
| Which one of the following combinations of statements is true of saccharides in living organisms? |
| Answer: D. 1, 2, 3, and 4. Saccharides provide energy, form storage compounds, and have structural roles in living organisms. |
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| CHEMISTRY------------------------------------------------------------------------------------------------------ |
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| Final zeros to the right of the decimal point are: |
| Answer: C. Significant (Final zeros after a decimal point (e.g., 2.300) are significant because they show precision) |
| The property of matter that is independent of its surroundings and position is: |
| Answer: C. Mass (Mass does not change with location (unlike weight)). |
| In s-block elements, low ionization energy means the elements: |
| Answer: D. Both A and C They readily lose electrons and form cations. |
| Elements were arranged in ascending order in the periodic table by: |
| Answer: D. Moseley (Moseley arranged elements by atomic number) |
| Percentage of nitrogen in ammonia is: |
| Answer: (14/17) × 100 ≈ 82.35% |
| An oxide of nitrogen contains 30.4% nitrogen, what is its mole ratio? |
| Answer: You’d use empirical formula steps here. Quick estimate: |
| N = 14, O = 16 |
| 30.4 g N → 30.4 / 14 = ~2.17 mol |
| 69.6 g O → 69.6 / 16 = ~4.35 mol |
| → Mole ratio ≈ 1:2 → So likely NO₂ |
| Answer: NO₂ (Ratio 1:2) |
| On the upper right corner of the periodic table is: |
| Answer: A. Non-metals |
|  |
| Density = 1.5 g/mL, Volume = 100 mL. Weight = ? → 1.5 × 100 = 150 g |
| Answer: closest correct value is: 150 g |
| Elements of a same group have: |
| Answer: C. Same chemical properties |
| Water is said to be permanently hard when it contains: |
| Answer: A. Chlorides of Ca²⁺ and Mg²⁺ |
| Moles of CO₂ in 8g of oxygen: |
| O in CO₂ = 32 g/mol → 8 / 32 = 0.25 mol |
| Answer: 0.25 |
| Rutherford's atomic model failed because: |
| Answer: A. It did not account for the stability of the atom |
| The second and third periods contain: |
| Answer: C. 8 elements each |
| Washing soda is: |
| Answer: B. Na₂CO₃·10H₂O |
| Standard temperature is: |
| Answer: A. 0°C |
| Dry ice is: |
| Answer: A. CO₂ (solid) |
| 23g of sodium is present in: |
| Answer: D. 1 mole of sodium |
| Alkali metals are strongly: |
| Answer: A. Reducing agents |
| Hydrogen forms salt hydrides with the elements of: |
| Answer: A. IA and IIA |
| Superoxides are expressed as: |
| Answer A. O₂⁻ |
| 21. Hexagonal system has axes: |
| Answer: D. a = b ≠ c |
| 22. Three-dimensional array of points is called: |
| Answer: C. Crystal lattice |
| 23. Standard pressure: |
| Answer: D. All of the above → 1 atm = 760 mmHg = 760 torr |
| 24. SiO₂ is known as: |
| Answer: D. Sand or silica |
| 26. The product of both fermentation and fractional distillation is: |
| Answer: C. an alcohol |
| → Ethanol is produced via fermentation and separated by fractional distillation. |
| 27. During condensation polymerization, two monomers may be joined by the removal of a molecule of: |
| Answer D. water |
| 28. The range of pH that represents sterile soil and above-soil condition: |
| Answer: A. 5...10 |
| → Most soils are productive in this range; below 5, they become too acidic for most plants. |
| 29. Ke for: CH₃COOH + C₂H₅OH ⇌ CH₃COOC₂H₅ + H₂O |
| Given: |
| [CH₃COOC₂H₅] = [H₂O] = 0.040 mol/dm³ |
| [CH₃COOH] = 0.018 mol/dm³ |
| [C₂H₅OH] = 0.022 mol/dm³ |
| Ke = (0.040 × 0.040) / (0.018 × 0.022) ≈ 4.04 |
| Answer: A. 4.04 |
| 30. Harmful reaction of metals in air or chemicals is called: |
| Answer: E. corrosion |
| 31. Catenation in carbon is the property of: |
| Answer: C. making long chains or rings of carbon atoms |
|  |
| 32 Gas that deviates most from ideal gas behavior: |
| Answer: A. HCl |
| → Strong intermolecular forces increase deviation. |
| 33. Max number of electrons in an orbital: |
| Answer: C. 2 |
| 34. Which is not a nucleophile: |
| Answer: D. BF₃ |
| → It's an electrophile. |
| 34. Purification of bauxite (removal of silica): |
| Answer: C. Serpek’s method |
| 35. Products formed during electrolysis of brine (NaCl solution): |
| Answer: C. hydrogen and sodium hydroxide |
| 36. Sodium reacts more vigorously than lithium because it: |
| Answer: C. is more electropositive |
| 37. Crystals formed by van der Waals interactions: |
| Answer: A. molecular crystals |
| 38. Law of mass action: Rate is proportional to: |
| Answer: B. product of molar concentration of reactants |
| 39. Sum of exponents of concentration terms in rate law gives: |
| Answer: E. order of reaction |
| 40. Nascent hydrogen for methane formation is obtained from: |
| Answer: B. HCl with Zn |
| 41. Zymase enzyme (used in fermentation) is present in: |
| Answer: B. yeast |
| 42. General formula of aldehyde: |
| Answer: E. R-CHO |
| 43. Element with multiple crystalline forms shows: |
| Answer: B. allotropy |
| 44. Formula of Plaster of Paris: |
| Answer: C. (CaSO₄)₂·H₂O |
| 45. LCAO leads to formation of: |
| Answer D. bonding and anti-bonding molecular orbitals |
| 46. False statement about H₂S: |
| Answer: E. It is a weak base in water |
| → H₂S acts more as an acid. |
| 47. Raindrops are spherical and ink spreads due to: |
| Answer: A. surface tensio |
| 48. 950 torr corresponds to: |
| → 1 atm = 760 torr → 950/760 ≈ 1.25 atm |
| Answer: D. 1.25 atm |
| 49. Enthalpy change when atom gains electron: |
| Answer: C. electron affinity |
| 50. Sigma bond is formed by: |
| Answer: B. head-on overlapping of atomic orbitals |
| Which of the following statements is true of amorphous solids? |
| Answer: They are isotropic |
| A nucleus consists of 11 protons and 12 neutrons. The conventional symbol of nucleus is: |
| Answer: ¹¹Na²³ |
| The dimensions of acceleration are: |
| Answer: LT⁻² |
| All of the following are scalar quantities, except: |
| Answer: Force |
| Which of the following statements is correct? |
| Answer: Faraday's experiment indicates the existence of electrons |
| "In an atom no two electrons can have the same set of four quantum numbers" is stated by: |
| Answer: Pauli's Exclusion Principle |
| Which of the following molecules have zero dipole moment? |
| Answer: All of the above (CCl₄, CO₂, C₆H₆) |
| Bond energy: |
| Answer: I and III only |
| Oxidation number of Nitrogen in HNO₃ is: |
| Answer: +5 |
| The rate law is: Rate = K[A][B]² |
| The order of reaction is: |
| Answer: 3 |
| Only two elements are present in: |
| Answer: Period-1 |
| The unit of rate of reaction is: |
| Answer: mol dm⁻³ s⁻¹ |
| Hydrides formed by passing hydrogen over hot alkali or alkaline earth metals are called: |
| Answer: Ionic hydrides |
| When gypsum is heated to about 100°C, it becomes: |
| Answer: Plaster of Paris |
| The chemical properties of sulfuric acid include: |
| Answer: All of the above |
| Complete the following reaction: Al + H₂SO₄ → |
| Answer: Al₂(SO₄)₃ + H₂ |
| The electronic configuration of iron is: |
| Answer: 1s², 2s², 2p⁶, 3s², 3p⁶, 3d⁶, 4s² |
| The chemical name of baking powder is: |
| Answer: Sodium bicarbonate (or Sodium hydrogen carbonate) |
| IUPAC nomenclature of CH₃–CH=CH–CH₂–CH=CH₂ is: |
| Answer: 1,3-hexadiene |
| Benzene can be prepared from: |
| Answer: All of the above |
| Electrophilic reactions of benzene include: |
| Answer: All of the above |
| OR⁻ is the nucleophile of: |
| Answer: Alcohols |
| Primary alcohol is produced by reaction of Grignard’s reagent with... |
| Answer: Acetaldehyde |
| An ester is prepared by the reaction of: |
| Answer: Carboxylic acid and alcohol |
| Acid used for etching glass: |
| Answer: Hydrofluoric acid |
| Heating 25 g of CaCO₃ produces how much CO₂: |
| Answer: 14 g |
| A balloon with 3.80 dm³ at 35°C is cooled to 5°C. Approximate volume: |
| Answer: 3.43 dm³ |
| If matter is divided in two, value of extensive property becomes: |
| Answer: Half of the original value |
| Measurement of heat absorbed or released in a chemical reaction is called: |
| Answer: Thermochemistry |
| Which of the following is TRUE regarding methyl alcohol? |
| Answer: It is a colorless, volatile, thin liquid with specific gravity 0.796 at 15°C |
| If the reaction: P + Q → R + S is described as being of zero order with respect to P, it means that: Answer: The rate of reaction is independent of the concentration of P |
| The number of moles of solute dissolved per liter of solution is called: Answer: Molarity |
| The oxidation number of all the elements in free state is: Answer: 0 |
| The unit of viscosity is: Answer: poises |
| The maximum possible number of electrons a shell 'n' can accommodate is given by: Answer: 2n² |
| Sum of all the exponents of molar concentration of the reactant present in the rate equation is known as: Answer: Order of reaction |
| "The properties of elements are the periodic function of their atomic number" is stated by: Answer: Modern periodic law |
| 2 grams of H₂ molecules contain molecules: Answer: 6.02 × 10²³ |
| Cl + e⁻ → Cl⁻, ΔH = –348 kJ/mol. The value –348 kJ/mol in this case will be: Answer: Electron affinity |
| Nitrogen dioxide decomposes: 2NO₂(g) ⇌ 2NO(g) + O₂(g), Given 0.8 mol O₂ formed from 4 mol NO₂ in 1 dm³ container. Value of Kc: Answer: 1.62 × 0.8 / 2.42 |
| H₂S is an example of: Answer: Covalent hydride |
| The formula of "rock salt" is: Answer: NaCl |
| In the reaction 2M + X₂ → 2MX (X is halogen), M is most likely to be: Answer: Alkali metal |
| CH₃–CH₂–CH₂–CH₃ and CH₃–CH(OH)–CH₃ are examples of: Answer: Functional group isomerism |
| CH≡CH + 2AgNO₃ → AgC≡CAg + 2HNO₃ represents a: Answer: Basic property of acetylene |
| Which one is not true for H₂SO₄? Answer: None of the above |
| Transition elements and their compounds are commonly used as catalysts due to: Answer: Variable oxidation state |
| The C–C bond distance is: Answer: 1.54 Å |
| –NH₂ group on benzene ring is: Answer: Ortho-para directing and activating group |
| The stability of carbonium ions follows the order: Answer: R₃C⁺ > R₂CH⁺ > RCH₂⁺ > CH₃⁺ |
| RMgX is an organometallic compound, generally known as: Answer: Grignard's Reagent |
| Formalin is used as a preservative for biological specimens. Answer: Formalin |
| sp³ hybridization in CH₄ gives it geometry: Answer: Tetrahedral |
| 1 calorie = Answer: 4.184 Joules |
| The amount of heat provided to a system at constant pressure (qₚ) is equal to: Answer: Change in enthalpy (ΔH) |
| For the reaction AgCl ⇌ Ag⁺ + Cl⁻, the solubility product (Ksp) is: Answer: Ksp = [Ag⁺][Cl⁻] |
| EDTA ion is a: Answer: Polydentate ligand |
| Iodine is needed in thyroxine, the hormone of thyroid gland. Answer: Iodine |
| If the reaction: P + Q → R + S is zero order with respect to P, it means that Answer: The rate of reaction is independent of the concentration of P |
| The number of moles of solute dissolved per liter of solution is called Answer: Molarity |
| The oxidation number of all the elements in free state is Answer: 0 |
| Comparative rates of diffusion of He and SO₂ will be Answer: 2 |
| The unit of viscosity is Answer: Poise |
| The maximum possible number of electrons a shell ‘n’ can accommodate is given by Answer: 4n² |
| Sum of all exponents of molar concentration of reactants in rate law is known as Answer: Order of reaction |
| Cl + e⁻ → Cl⁻, ΔH = -348 kJ/mol. This value is Answer: Electron affinity |
| "The properties of elements are a periodic function of atomic number" is Answer: Modern periodic law |
| 2 grams of H₂ contain how many molecules? Answer: 6.02 × 10²³ |
| In the reaction 2NO₂ ⇌ 2NO + O₂, if 4 mol NO₂ gives 0.8 mol O₂ at equilibrium, Kc is Answer: ~0.355 |
| H₂S is an example of Answer: Covalent hydride |
| The formula of rock salt is Answer: NaCl |
| In reaction 2M + X₂ → 2MX, M is most likely Answer: Alkali metal |
| Which one is NOT true for H₂SO₄? Answer: Sulphonating agent (context-dependent false statement) |
| Transition elements act as good catalysts because of Answer: Variable oxidation states |
| The C–C bond length is Answer: 1.54 Å |
| CH₃–CH₂–CH₂–CH₃ and CH₃–CH(OH)–CH₃ are examples of Answer: Functional group isomerism |
| Reaction: CH≡CH + 2AgNO₃ → AgC≡CAg + 2HNO₃ represents Answer: Acidic property |
| –NH₂ group on benzene is Answer: Ortho-para directing and activating |
| Stability order of carbonium ions is Answer: R₃C⁺ > R₂CH⁺ > RCH₂⁺ > CH₃⁺ |
| RMgX is known as Answer: Grignard’s reagent |
| Formalin, used to preserve biological specimens, is Answer: Formalin (aqueous solution of formaldehyde) |
| Picric acid structure is Answer: OH–NO₂–NO₂–NO₂ (trinitrophenol) |
| CH₄ has sp³ hybridization and geometry is Answer: Tetrahedral |
| 1 calorie = Answer: 4.184 J |
| At constant pressure, heat (qₚ) is equal to Answer: ΔH |
| For AgCl ⇌ Ag⁺ + Cl⁻, Ksp is Answer: [Ag⁺][Cl⁻] |
| EDTA is a Answer: Polydentate ligand |
| In which of the following compounds carbon uses sp³ hybrid orbitals for bond formation? Answer: C₂H₆ |
| The table below gives the bond dissociation energies of single covalent bonds of carbon atom with elements A, B, C, and D. Which bond is strongest? Answer: C–D (485 kJ/mol) |
| What is the major product of the nitration reaction on bromophenol? Answer: NO₂ group substitutes ortho and para to the OH group, so Answer: d) (Structure with NO₂ at ortho and para positions relative to OH) |
| Which of the following molecules are aromatic? Answer: I, II, and III (Assuming all meet Huckel’s rule: cyclic, planar, fully conjugated, and 4n+2 π-electrons) |
| Commercial hydrogen is obtained from: Answer: Coal gas |
| The ionization of hydrogen atom gives: Answer: Proton |
| Which is most basic in character? Answer: NaOH |
| Oxygen does not react with: Answer: Gold (implied; not given, but none of A, B, C, D is unreactive—context incomplete) |
| Physical properties of ethyne include: Answer: All of the above |
| Colourless gas with sweet smell |
| Sparingly soluble in water |
| Less dense than air |
| Explosive on compression |
| How will the equilibrium shift if additional nitrogen is added to N₂ + 3H₂ ⇌ 2NH₃? Answer: It will be shifted to the right |
| NH₃ (amine) is an example of: Answer: Neutral ligand |
| The hybridization of atomic orbitals of N in N₂, NO₂, and NH₃ are respectively: Answer: sp, sp², sp³ |
| The dipole moments of BF₃, NF₃, and NH₃ are such that: Answer: NH₃ > NF₃ > BF₃ |
| The unit cell with crystallographic dimensions a = b = c and α = β = γ = 90° is: Answer: Cubic |
| H₂O has a higher boiling point than HF because: Answer: H₂O can form more hydrogen bonds |
| Which of the following best describes the emission spectrum of atomic hydrogen? Answer: Several discrete series of lines with both intensity and spacings between lines decreasing as the wavenumber increases with each series |
| Ethyl alcohol when treated with concentrated H₂SO₄ may give: Answer: All of the above |
| Diethyl sulphate |
| Diethyl ether |
| Ethylene |
| Which of the following properties could be predicted for strontium? Answer: It forms a sparingly soluble sulphate |
| Why does Mg(OH)₂ precipitate when Ca(OH)₂ is added to seawater? Answer: The solubility product for Mg(OH)₂ is lower than that for Ca(OH)₂ |
| When methylbenzene is treated with bromine in the presence of a catalyst, the two monobromo isomers are: Answer: Ortho- and para-bromotoluene |
| The series limit for the Balmer series of hydrogen spectrum occurs at 3664 Å. Calculate ionization energy of hydrogen atom. Answer: 5.425 × 10⁻¹⁹ J |
| Bond energy between nitrogen atoms in N₂ molecule is: Answer: 946 kJ/mol |
| The solubility product for BaSO₄ at 18–25°C is: Answer: 1.8 × 10⁻¹⁰ mol²dm⁻⁶ |
| Atomic number of C is 6 and H is 1. How many electrons are present in 1.6 grams of methane (CH₄)? Answer: 6.02 × 10²³ electrons |
| A 200 mL drink contains CO₂ at 0.1 M concentration. What is its volume at STP? Answer: 2.24 litres |
| Surface tension in a liquid is caused by: Answer: A lack of horizontal intermolecular forces (best paraphrased as unbalanced intermolecular forces at the surface) |
| How many electrons can have the quantum numbers n = 2, l = 1, s = +½? Answer: 3 (One in each of the three 2p orbitals) |
|  |
| Physics------------------------------------------------------------------------------------------------------------------ |
| A 2.0x10³ kilograms car travels at constant speed of 12 meters per second around a circular curve of radius 30 meters. As the car goes around the curve, the centripetal force is directed: Answer: Towards the center of circular curve |
| Amount of work done against friction to slide a box in a straight line across the uniform horizontal floor depends most on the: Answer: Distance the box is moved |
| A car travels 90 meters towards north in 15 seconds. Then the car turns around travels 40 meters towards south in 5.0 seconds. What is the magnitude of the average velocity of the car during this 20 seconds interval? Answer: 2.5 m/s |
| At the top of a trajectory of a projectile, the directions of its velocity and acceleration are: Answer: Perpendicular to each other |
| A bag is dropped from an aeroplane flying horizontally at a constant speed. Neglecting air resistance, where will the aeroplane be when the bag reaches the ground: Answer: Directly above the bag |
| The angle subtended at the center of a circle by an arc of length equal to its radius is equal to: Answer: One radian |
| A body is moving with a uniform speed of 2 m/s in a circle of radius 0.4 m. Its angular speed given in rad/sec is: Answer: 5 |
| The necessary centripetal force to the moving car around a corner track is provided by: Answer: Force of friction |
| If a body of mass "m" is moving with a constant speed "V" in a circular path of radius "r", its tangential acceleration is: Answer: Zero |
| If a body moves with a constant speed in a circle: Answer: No work is done on it |
| A body is called a rigid body, if under the action of force, distance between two points: Answer: Remains same |
| If the line of action of force passes through the axis of rotation then torque is: Answer: Zero |
| When the first condition of equilibrium is satisfied then the body has no: Answer: Linear acceleration |
| When the second condition of equilibrium is satisfied then the body has no: Answer: Rotational acceleration |
| If the distance between two mass particles is doubled, the gravitational force between them: Answer: Is reduced to one fourth of the original value |
| If the distance between two mass particles is halved, the gravitational force between them becomes: Answer: Four times |
| If the distance between two mass particles is doubled and their masses are also doubled, the gravitational force: Answer: Remains Unchanged (constant) |
| The minimum velocity at which a body must be projected to go out from the Earth's gravitational pull is called: Answer: Escape velocity |
| The intensity of Earth's gravitational field is maximum at: Answer: The poles |
| A body weighs 100 N on the surface of the earth. Its weight at a depth equal to half of the radius of the earth is: Answer: 25 N |
| The value of acceleration due to gravity "g" at the center of the Earth is: Answer: Zero |
| Artificial gravity created in a satellite overcomes the state of weightlessness experienced by the astronauts in it by: Answer: Causing the satellite to rotate about its own axis |
| Weightlessness experienced in a spaceship is due to: Answer: Free fall of the spaceship |
| If the force and displacement are at the right angle to each other then the work done is: Answer: Zero |
| The kinetic energy of a 100 gm bullet moving at a speed of 100 m/s is: Answer: 500 J |
| Electron volt is the unit of: Answer: Energy |
| kWh is the unit of: Answer: Energy |
| A particle moves from position r₁ = 3i + 2j − 6k to r₂ = 12i + 13j + k under the action of force F = 8i + 20j − 2k. Find the work done by the force. Answer: C. 125 units |
| A body starts sliding on a rough horizontal surface with a speed of 10 m/s. If the coefficient of friction is 0.2, find the distance traveled by the body before coming to rest. (g = 10 m/s²) Answer: B. 25 m |
| A positively charged particle executes uniform circular motion within a uniform magnetic field B. If the charge is q and the radius of its path is r, which of the following expressions gives the magnitude of the particle's linear momentum? Answer: A. qBr |
| A transverse wave on a long horizontal rope with a wavelength of 8 m travels at 2 m/s. At t = 0 a point on the rope has a vertical displacement of +A. At what time will the vertical displacement be −A? Answer: C. t = 2 s |
| The dimensions of volume and acceleration (respectively) are: Answer: C. L³ and LT⁻² |
| A vector such as the velocity of a body undergoing uniform translational motion that can be displaced parallel to itself and applied at any point is called a: Answer: B. Free vector |
| When a conductor of cross-sectional area 5 × 10⁻⁶ m² carries a current of 6 A, and the drift velocity is 1.2 × 10⁻⁴ m/s, what is the number density of conduction electrons? Answer: D. 6.3 × 10²⁸ m⁻³ |
| A thermocouple is immersed in water at 373 K and the other junction in ice at 273 K. The e.m.f. of the thermocouple is 90 µV per K, and the resistance is 6 Ω. What current flows in the galvanometer? Answer: A. 18 μA |
| What is the magnetic flux density at a point 3 cm from a long straight wire carrying 25 A? (μ₀ = 4π × 10⁻⁷) Answer: B. 1.67 × 10⁻⁴ T |
| If an object is placed 30 cm from a convex lens with a focal length of 15 cm, what is the approximate size of the image compared to the object? Answer: A. Twice as large |
| In an isothermal expansion of an ideal gas, which of the following is correct? Answer: C. ΔU = 0 |
| A body of mass 5 kg initially at rest is moved by a horizontal force of 2 N on a smooth horizontal surface. Find the work done by the force in 10 seconds. Answer: C. 50 J |
| An object is placed 60 cm in front of a concave mirror with focal length 40 cm. Which best describes the image? Answer: E. Real, 120 cm from mirror |
| An object is placed 60 cm in front of a convex mirror. If the image forms at 20 cm behind the mirror, what is the mirror's radius of curvature? Answer: C. 30 cm |
| Find the unit vector parallel to the vector B = 6i + 12j − 4k Answer: B. 6/14i + 12/14j − 4/14k |
| Two capacitors C₁ = 2 μF and C₂ = 4 μF are connected in series across a 100 V supply. Find the effective capacitance. Answer: B. 3/2 μF |
| A rescue helicopter drops a package of rations while flying horizontally at 40 m/s from a height of 100 m. Where does the package land relative to the drop point? (g = 9.8 m/s²) Answer: D. 180.7 m |
| The radius of the Moon is 27% that of Earth and mass is 1.2% of Earth’s mass. What is the acceleration due to gravity on the Moon’s surface? Answer: A. 0.431 m/s² |
| A battery has an emf of 6.0 V and internal resistance 0.4 Ω. Connected to a 2.6 Ω resistor: – When switch is open, potential difference across battery: Answer: E. 6.0 V – When switch is closed, potential difference across battery: Answer: D. 5.2 V |
| Two balls of equal volume but different weights (2 N and 10 N) are dropped from rest simultaneously. Which is true? Answer: C. II and IV only |
| A car at rest accelerates at 2 m/s². A bus passes it at 10 m/s. How far ahead will the car overtake the bus? Answer: E. 100 m |
| A sample of ideal gas occupies volume V at pressure P and temperature T. If mass of each molecule is m and k is Boltzmann constant, density is: Answer: D. Mp/KT |
| A ball moving horizontally at speed v strikes a pendulum bob of equal mass at rest. After an elastic collision, to what height does the bob rise? Answer: B. v² / 2g |
| A point source is placed at the principal focus of a concave lens. What happens to the light? Answer: B. 1 and 3 only (It will diverge; It will seem to come from a point ½ radius of curvature from lens) |
| The quantity of heat required to raise 1 mole of a substance by 1 K (unit: J·mol⁻¹·K⁻¹) is called: Answer: B. Molar specific heat |
| A shot is fired at 160 m/s. What is the maximum range and maximum height it can reach? (g = 10 m/s²) Answer: B. 2560 m, 640 m |
| A player throws a ball at an initial velocity of 36 m/second. The main distance the ball can reach (assume ball is caught at the same height at which it was released) is: |
| Answer: C. 132 m |
| A car starts from rest and moves with a constant acceleration. During the 5th second of its motion, it covers a distance of 36 meters. What is the acceleration of the car? |
| Answer: B. 8 m/s² |
| Artificial gravity can be applied by which of the following ways so that normal force of gravity can be generated for the astronaut: |
| Answer: A. rotating the space craft |
| Law of conservation of momentum states that: |
| Answer: A. I only |
| A 70 kg man runs up a hill through a height of 3 meters in 2 seconds. Its average power output is (g = 10 m/s²): |
| Answer: A. 1050 watts |
| The torque will be greater if: |
| Answer: B. both magnitude of force and moment arm are greater |
| Example(s) of spin motion is/are: |
| Answer: D. rotation of flywheel about its axle |
| The sum of Kinetic Energy and the Potential Energy is always constant provided: |
| Answer: B. there is no force of friction involved during the motion of the body |
| A block with a mass of 0.1 kg is attached to a spring and placed on a horizontal frictionless table. The spring is stretched 20 cm when a force of 5 N is applied. The spring constant is: |
| Answer: B. 25 N/m |
| If the resultant intensity of the interfering waves is zero or less than the intensity of the individual wave, then this type of interference is: |
| Answer: A. destructive interference |
| The smaller the distance of the object from the eye, the visual angle will be: |
| Answer: B. greate |
| A system absorbs 2000 Joules of heat and delivers 1200 Joules of work while losing 200 Joules of heat by conduction to the atmosphere. The change in the internal energy of the system is: |
| Answer: B. 600 J |
| The efficiency of Carnot's Engine working between 150°C and 50°C is: |
| Answer: C. 23.6% |
| An electron is situated midway between two parallel plates 0.5 cm apart. One of the plates is maintained at a potential of 60 volts above the other. The force on the electron is (e = 1.6 × 10⁻¹⁹ C): |
| Answer: A. 1.92 × 10⁻¹⁵ N |
| The principle of a capacitor is based on which of the following facts? |
| Answer: E. potential of a conductor is greatly increased with an increase in the charge in it |
| A current of 4.4 amperes is flowing in a wire. How many electrons pass a given point in the wire in one second, if the charge on an electron is 1.6×10⁻¹⁹ coulomb? |
| Answer: B. 2.75 × 10¹⁹ electrons |
| An electric kettle of 1500 watts rating boils a certain quantity of water in 5 minutes. The heat which is generated for boiling this water is: |
| Answer: A. 45 × 10⁴ Joules |
| A force which is experienced in a magnetic field depends on: |
| Answer: D. all of the above |
| A coil of 600 turns is threaded by a flux of 8×10⁻² Wb. If this flux is reduced to 3×10⁻² Wb in 0.015 seconds, the average induced e.m.f is: |
| Answer: C. 20 volts |
| Which of the following work(s) on the principle of Wheatstone Bridge? |
| Answer: D. all of the above |
| The sinusoidal wave form can be varied by using which of the following parameters? |
| Answer: E. I, II and III |
| A semiconductor photodiode is a: |
| Answer: A. reverse biased junction diode |
| The speed of light is very nearly equal to: |
| Answer: D. 3 × 10⁸ m/sec |
| Radiation can cause: |
| Answer: E. all of the above |
| Application(s) of laser is/are: |
| Answer: E. all of the above |
| Two vectors make angles 30° and 90° with the X-axis respectively and have magnitudes 4 cm and 3 cm. Their vector product is: |
| Answer: B. 6√3 |
| Identify the example(s) of Static Equilibrium Answer: E. I, II and III |
| The mass of Earth on the basis of Newton's Law of Gravitation Answer: C. M = 5.98 × 10²⁴ kg |
| Fusion and fission reactions are associated with Answer: D. Nuclear energy |
| What is the change in gravitational potential energy when a 7000 N elevator moves from street level to the top of a building 300 m above Answer: D. 2.1 × 10⁶ J |
| A body of mass 0.025 kg attached to a spring is displaced through 0.1 m to the right of equilibrium position. If the spring constant is 0.4 N/m and its velocity at the end of displacement is 0.4 m/sec, then its total energy will be Answer: B. 0.0002 J |
| The unit of luminous intensity Answer: D. Candela |
| If A = -2i + 3j - k and B = 4i + 2j - 2k, find a vector X parallel to A but with the magnitude of B Answer: A. √12/7 (2i - 3j + k) |
| If A = 3i + 6j - 2k, then the unit vector parallel to A Answer: B. 3/7i + 6/7j - 2/7k |
| If V = lim Δr/Δt, then V will be Answer: C. Instantaneous velocity |
| A ball is thrown vertically upward with a velocity of 98 m/s. How high does the ball rise Answer: D. 490 m |
| A particle is projected at an angle of 45° with a velocity of 9.8 m/s. The horizontal range will be (g = 9.8 m/s²) Answer: C. 9.8 m |
| 1 radian equals how many degrees Answer: D. 57.3° |
| A system absorbs 1000 J of heat and delivers 600 J of work, while losing 100 J of heat by conduction to the atmosphere. The change in internal energy will be Answer: B. 300 Joules |
| A device which makes use of mutual induction for stepping up or down an alternating e.m.f. Answer: B. Transformer |
| If I = r × p and r = position vector, p = linear momentum, then I is Answer: C. Angular momentum |
| The superposition of two light waves Answer: C. Interference |
| A convex lens of focal length 20 cm is used to form an erect image which is twice as large as the object. The position of the object from the lens Answer: D. 30 cm |
| Electromagnetic waves are produced by Answer: A. Motion of electric and magnetic fields |
| The energy of an X-ray quantum of wavelength 1.0 × 10⁻¹⁰ m Answer: A. 1.99 × 10⁻¹⁵ J |
| The shortest wavelength photon emitted in the Balmer series Answer: C. 364.6 nm |
| To remove the huge amount of heat energy in a nuclear reactor Answer: E. Coolants |
| The half-life of C-14 Answer: E. 5730 years |
| The equation ΔU = ΔQ refers to Answer: C. Isochoric process |
| Two capacitors C₁ = 3 μF and C₂ = 6 μF are in series across a 90 V DC supply. The total capacitance Answer: B. 2 μF |
| Kinetic energy of a charged particle decreases by 10 J as it moves from a point at potential 100 V to 200 V. The charge on the particle Answer: A. 10⁻¹ C |
| A 100 watt bulb is operated by 240 volts. The current through the bulb Answer: A. 0.42 A |
| A bulb having a resistance of 1500 Ω is connected to a 225 volt source. The current in the bulb Answer: A. 0.15 A |
| A box of mass m = 6 kg slides with speed v = 4 m/s across a frictionless floor. It suddenly explodes into two pieces. One piece, with mass m1 = 2 kg moves in the same direction with speed V1= 8 m/s. Find the velocity of the second piece. Answer: A. 2 m/s |
| A generator of e.m.f. 80 V has an internal resistance of 0.040. If its terminal voltage is 75 V, determine the current. Answer: B. 135 A |
| A 4 cm high object is located 10 cm from the converging lens, whose focal length is 20 cm. The image so formed will be: Answer: C. Real |
| A rotating wheel of radius 0.5 m has an angular velocity of 5 rad/s at some instant and 10 rad/s after 5s. Find the angular acceleration of a point on its rim. Answer: A. 1 rad/s² |
| A block of mass 50 kg is pulled on a frictionless floor by a force of 210 N directed at 30° to the horizontal. If the block moves 3.0 m, what is the work done on it by the applied force? Answer: B. 215√2 J |
| A ball of mass 2 kg traveling at 8 m/s strikes a ball of mass 4 kg traveling at 2 m/s. Both balls are moving along the same straight line. After collision, both balls move at the same velocity. What is the magnitude of the velocity? Answer: B. 5 m/s |
| A shot leaves a gun at the rate of 160 m/s. Calculate the greatest distance to which it could be projected. (Take g=10 m/s²). Answer: C. 2680 m |
| On the ground, the gravitational force on a satellite is W. What is the gravitational force on the satellite when at a height R/50, where R is the radius of the Earth? Answer: D. 0.96 W |
| When the aircraft Concorde is moving in a horizontal plane at a constant speed of 650 m/s, its turning circle has a radius of 80 km. What is the ratio of the centripetal force to the weight of the aircraft? (g=9.8 m/s²) Answer: B. 0.54 |
| The amount of heat at constant volume is called: Answer: A. Internal energy |
| A parallel beam of white light is incident normally on a diffraction grating. It is noted that the second-order and third-order spectra partially overlap. Which wavelength in the third-order spectrum appears at the same angle as the wavelength of 600 nm in the second-order spectrum? Answer: C. 600 nm |
| If the frequency of a pendulum is four times greater on an unknown planet than it is on Earth, then the gravitational constant on that planet is: Answer: B. 4 times greater |
| A submarine sends out a sonar signal (sound wave) in a direction directly downward. It takes 2.3 s for the sound wave to travel from the submarine to the ocean bottom and back to the submarine. How high (approx) is the submarine from the ocean? (The speed of sound in water is 1,490 m/s.) Answer: C. 5,000 m |
| A 40 kg block is resting at a height of 5 m off the ground. If the block is released and falls to the ground, what is its total energy at a height of 2 m? Answer: D. 6 kJ |
| Gamma (y) ray can produce ionization in which of the following ways? Answer: E. I, II, and III |
| The internal energy of an object increases in an adiabatic process. Which of the following must be true regarding this process? Answer: C. Work is done on the system |
| An electric rod of 2000 watts rating boils a certain quantity of water in 10 minutes. The heat which is generated for boiling this water is: Answer: C. 3 × 10⁵ Joules |
| A nucleus consists of 19 protons and 20 neutrons. The conventional symbol of this nucleus is: Answer: C. ¹⁹K³⁹ |
| The linear magnification produced by a lens is defined as the ratio of the: Answer: A. I only (Size of the image to the size of the object) |
| The half-life of C14 is approximately 5,730 years, while the half-life of C12 is essentially infinite. If the ratio of C14 to C12 in a certain sample is 25% less than the normal ratio in nature, how old is the sample? Answer: C. Significantly greater than 5,730 years, but less than 11,460 years |
| Which of the following statements is not consistent with Bohr's set of postulates regarding the hydrogen atom model with regard to the emission and absorption of light? Answer: D. To jump from a higher energy to a lower energy, an electron absorbs a photon of a frequency such that the photon's energy is exactly the energy difference between the two orbits. |
| The temperature of a body at 100°C is increased by Δθ as measured on the Celsius scale. How is this temperature change expressed on the Kelvin scale? Answer: B. Δθ + 273 |
| In an astronomical telescope, the distance between the objective and the eyepiece is called: Answer: C. Length of the telescope |
| An electric heater can be represented as two resistors of resistances R1 and R2 and two switches S1 and S2. The resistance R2 is greater than that of R1. Which switches must be closed so that the heater produces the maximum possible power and minimum non-zero power? Answer: B. S1 and S2 (for maximum possible power) Answer: D. S2 (for minimum non-zero power) |
| Candela is the luminous intensity, in the perpendicular direction of a surface square meter of a black body at the temperature of freezing platinum under a pressure of 101325 newton per square meter. Answer: C. 1/900,000 |
| The work done in moving an object along a straight line from (3, 2, -1) to (2, -1, 4) in a force field which is given by F=4i-3j+2k. Answer: A. 45 J |
| A box of mass m = 6 kg slides with speed v = 4 m/s across a frictionless floor. It suddenly explodes into two pieces. One piece, with mass m1 = 2 kg moves in the same direction with speed V1= 8 m/s. Find the velocity of the second piece. Answer: A. 2 m/s |
| A generator of e.m.f. 80 V has an internal resistance of 0.040. If its terminal voltage is 75 V, determine the current. Answer: B. 135 A |
| A 4 cm high object is located 10 cm from the converging lens, whose focal length is 20 cm. The image so formed will be: Answer: C. Real |
| A rotating wheel of radius 0.5 m has an angular velocity of 5 rad/s at some instant and 10 rad/s after 5s. Find the angular acceleration of a point on its rim. Answer: A. 1 rad/s² |
| A block of mass 50 kg is pulled on a frictionless floor by a force of 210 N directed at 30° to the horizontal. If the block moves 3.0 m, what is the work done on it by the applied force? Answer: B. 215√2 J |
| A ball of mass 2 kg traveling at 8 m/s strikes a ball of mass 4 kg traveling at 2 m/s. Both balls are moving along the same straight line. After collision, both balls move at the same velocity. What is the magnitude of the velocity? Answer: B. 5 m/s |
| A shot leaves a gun at the rate of 160 m/s. Calculate the greatest distance to which it could be projected. (Take g=10 m/s²). Answer: C. 2680 m |
| On the ground, the gravitational force on a satellite is W. What is the gravitational force on the satellite when at a height R/50, where R is the radius of the Earth? Answer: D. 0.96 W |
| When the aircraft Concorde is moving in a horizontal plane at a constant speed of 650 m/s, its turning circle has a radius of 80 km. What is the ratio of the centripetal force to the weight of the aircraft? (g=9.8 m/s²) Answer: B. 0.54 |
| The amount of heat at constant volume is called: Answer: A. Internal energy |
| A parallel beam of white light is incident normally on a diffraction grating. It is noted that the second-order and third-order spectra partially overlap. Which wavelength in the third-order spectrum appears at the same angle as the wavelength of 600 nm in the second-order spectrum? Answer: C. 600 nm |
| If the frequency of a pendulum is four times greater on an unknown planet than it is on Earth, then the gravitational constant on that planet is: Answer: B. 4 times greater |
| A submarine sends out a sonar signal (sound wave) in a direction directly downward. It takes 2.3 s for the sound wave to travel from the submarine to the ocean bottom and back to the submarine. How high (approx) is the submarine from the ocean? (The speed of sound in water is 1,490 m/s.) Answer: C. 5,000 m |
| A 40 kg block is resting at a height of 5 m off the ground. If the block is released and falls to the ground, what is its total energy at a height of 2 m? Answer: D. 6 kJ |
| Gamma (y) ray can produce ionization in which of the following ways? Answer: E. I, II, and III |
| The internal energy of an object increases in an adiabatic process. Which of the following must be true regarding this process? Answer: C. Work is done on the system |
| An electric rod of 2000 watts rating boils a certain quantity of water in 10 minutes. The heat which is generated for boiling this water is: Answer: C. 3 × 10⁵ Joules |
| A nucleus consists of 19 protons and 20 neutrons. The conventional symbol of this nucleus is: Answer: C. ¹⁹K³⁹ |
| The linear magnification produced by a lens is defined as the ratio of the: Answer: A. I only (Size of the image to the size of the object) |
| The half-life of C14 is approximately 5,730 years, while the half-life of C12 is essentially infinite. If the ratio of C14 to C12 in a certain sample is 25% less than the normal ratio in nature, how old is the sample? Answer: C. Significantly greater than 5,730 years, but less than 11,460 years |
| Which of the following statements is not consistent with Bohr's set of postulates regarding the hydrogen atom model with regard to the emission and absorption of light? Answer: D. To jump from a higher energy to a lower energy, an electron absorbs a photon of a frequency such that the photon's energy is exactly the energy difference between the two orbits. |
| The temperature of a body at 100°C is increased by Δθ as measured on the Celsius scale. How is this temperature change expressed on the Kelvin scale? Answer: B. Δθ + 273 |
| In an astronomical telescope, the distance between the objective and the eyepiece is called: Answer: C. Length of the telescope |
| An electric heater can be represented as two resistors of resistances R1 and R2 and two switches S1 and S2. The resistance R2 is greater than that of R1. Which switches must be closed so that the heater produces the maximum possible power and minimum non-zero power? Answer: B. S1 and S2 (for maximum possible power) Answer: D. S2 (for minimum non-zero power) |
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| English---------------------------------------------------------------------------------------------------------------------- |
| A body is displaced from X to X2 by a force of 2X. The work done is Answer: A. 2X(X2 - X1) |
| The unit of power in the British Engineering system is: Answer: D. Horsepower |
| An electric motor creates a tension of 45N in a hoisting cable and reels it in at the rate of 2m/s. The power of the motor is: Answer: B. 90W |
| Nexus means: Answer: B. Influence |
| BENNET: Answer: B. A person of family name |
| MOB synonym: Answer: B. Disorderly crowd |
| Dabble: Answer: A. Involve oneself without serious effort |
| Vise: Answer: C. A tool with two jaws |
| Don't post these letters. (Change the voice) Answer: A. Let these letters be posted |
| He asked me why I was going to Karachi? (Change the form of narration) Answer: D. He said to me, "Why had I gone to Karachi?" |
| What are you doing? (Change into passive voice) Answer: B. What is being done by you? |
| He is known \_\_\_\_\_\_ every lady. (Insert the appropriate preposition) Answer: A. By |
| Punjab is \_\_\_\_\_\_\_ fertile province of Pakistan. (Insert articles) Answer: A. The, a |
| DISRUPTION: Answer: C. Trouble |
| INEVITABLE: Answer: D. Certain |
| ERADICATION: Answer: C. Control |
| INTERRUPTION: Answer: B. Continuity |
| The stories that she makes out for her children ought to be Answer: "makes out" should be changed to "makes up". Corrected sentence: "The stories that she makes up for her children ought to be." |
| In the view of the author, what is the harm of cultural uniformity? Answer: E. It will lead to the destruction of values |
| The author is in favor of: Answer: C. Political and cultural Independence |
| Nearly everyone dreams of building Answer: B. Their ideal house. |
| Life requires water, light, a moderate temperature, and a variety of chemical elements: Answer: E. requires |
| How will they got across the river if the ferry is not running? Answer: "got" should be changed to "get." Corrected sentence: "How will they get across the river if the ferry is not running?" |
| Children depend on their parents for food and clothing. Answer: No error. |
| ASSERTION: Answer: c. Claim |
| OBSTINATE: Answer: a. Persistent |
| The phrase "spread like a grass fire" means: Answer: a. rapid spread |
| UNAMBIGUOUS: Answer: c. clear |
| WRECKED: Answer: d. dreadful sight |
| Identify the phrase in which the people of the East Side experienced one of the deadliest fears of their lives: Answer: c. "The dam has broken" |
| The injured player was taken \_\_\_\_\_\_ the field. Answer: b. Off |
| The box is \_\_\_\_\_\_ green outside and white inside. Answer: c. Painted |
| Projectile must be launched at which angle with the horizontal to attain maximum range? Answer: b. 45° |
| He brought down the tiger with his first shot. Answer: No error. |
| The noise of the traffic make it impossible for us to work with the windows open. Answer: "make" should be changed to "makes." Corrected sentence: "The noise of the traffic makes it impossible for us to work with the windows open." |
| The author of the passage followed which of the following objectives? Answer: D. I, II & III Only (Truth, Goodness, Beauty) |
| Which of the following is contemptible for the author? Answer: B. property, outward success, luxury |
| He got off his bicycle through the gate. Answer: C. wheeled |
| Somebody has not turned the tap \_\_\_\_\_\_. Answer: B. off |
| FREIGHT: Answer: B. luggage |
| HARDSHIP: Answer: D. suffering |
| NEGLIGIBLE: Answer: A. significant |
| ELEGANT: Answer: B. unattractive |
| I \_\_\_\_\_\_ have to get up early tomorrow morning. Answer: A. shall |
| He says he is a \_\_\_\_\_\_, but he can't play the piano or any other instrument and he can't sing. Answer: A. musician |
| GENTLE: Answer: D. calm |
| The secretary must type these letters \_\_\_\_\_\_ before lunch. Answer: No error. |
| I go by the post office every morning \_\_\_\_\_\_ my way to work. Answer: B. on |
| SQUASH: Answer: A. squeeze |
| GRIEVE: Answer: B. hurt |
| It can be inferred from the passage that the author thinks: Answer: D. a good personal life can be achieved by recognizing the nature of values and their degree of importance. |
| DISTRESS: Answer: E. happiness |
| SWIFT: Answer: A. slow |
| The title of the passage can be: Answer: C. Universe and its unneeded vastness |
| According to the author, if the universe had been designed primarily to produce life like our own then: Answer: B. there would have been a better proportion, for us |
| The tree must \_\_\_\_\_\_ fifty years ago. Answer: A. been |
| It is quite \_\_\_\_\_\_ for poor people to be happier than rich people. Answer: A. possible |
| The office is so busy that two extra clerks \_\_\_\_\_\_ had to be taken on. Answer: C. have |
| Mr. Ahmed is \_\_\_\_\_\_ old to work now; he depends upon his son. Answer: A. too |
| MEDITATIVE: Answer: B. thoughtful |
| AMAZEMENT: Answer: A. surprise |
| If the children do their homework quickly, they will have time to watch television. No Error. Answer: E. No Error |
| The bus stopped too take up three or four people who were waiting by the post office. No error. Answer: A. too → to |
| AMUSED: Answer: C. Annoyed |
| RELIEVED: Answer: C. relaxed |
| BRUTAL: Answer: B. cruel |
| CONVICT: Answer: C. acquit |
| Some substances are alive and some are not: Answer: E. None of the above |
| There was nothing but "Doth suffer a sea-change into something rich and strange" means: Answer: B. In everyday life natural things change drastically |
| The milkman \_\_\_\_\_\_ many bottles of milk to our school every day. Answer: A. delivers |
| I was having a cup \_\_\_\_\_\_ when he knocked on the door. Answer: D. of |
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