# UPCATET Agriculture Chemistry Sample Paper-6

**Duration: 25 Minutes** **Maximum Marks: 100**

## Instructions

- This paper contains **25** Multiple Choice Questions.
- Each correct answer carries **+4** mark. Incorrect answer: **−1** marks. Only **one** correct option.
- Unattempted questions carry **0** marks.
- Use of mobile phones, smartwatches, or any electronic gadgets is strictly prohibited.

**Q1.** What is the normality of a sulfuric acid solution if 30 mL of the acid requires exactly 40 mL of 0.2 N potassium hydroxide for complete neutralization?

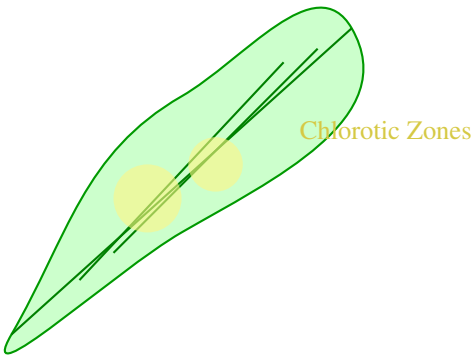
(A) 0.133 N

(B) 0.267 N

(C) 0.400 N

(D) 0.533 N

**Q2.** A sandy loam soil sample exhibits severe iron deficiency chlorosis in the upper leaf lamina of pulse crops, with yellowing appearing between the green leaf veins. Which soil condition primarily triggers this deficiency symptom?




(A) Strongly acidic soil with pH below 4.5 and high manganese

(B) Calcareous soil with high pH above 7.5 reducing iron availability

(C) Waterlogged conditions promoting iron(II) toxicity

(D) Excessive potassium fertilization blocking iron uptake

**Q3.** During a chemistry experiment, a sample of pure calcium carbonate ($CaCO_3$, molecular weight = 100) is thermally decomposed. Calculate the theoretical mass of calcium oxide produced from 5 grams of the starting material.

(A) 1.4 grams

(B) 2.8 grams

(C) 3.2 grams

(D) 4.8 grams

**Q4.** An aqueous solution is prepared by dissolving 1.7 grams of ammonium chloride ($NH_4Cl$, molecular weight = 53.5) in water to make 500 mL of solution. What is the molarity of this solution?

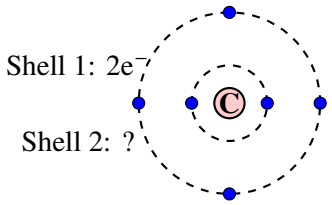
(A) 0.0318 M

(B) 0.0636 M

(C) 0.127 M

(D) 0.254 M

**Q5.** The structural diagram below represents the electron distribution in a carbon atom according to the aufbau principle. How many electrons occupy the outermost valence shell?




(A) 2 electrons

(B) 4 electrons

(C) 6 electrons

(D) 8 electrons

**Q6.** Which organic functional group characterizes a compound where a carbon atom is bonded to both a hydroxyl group (−OH) and an aldehyde group (−CHO), making it a carbonyl-containing alcohol?

(A) Enol

(B) Carboxylic acid

(C) Ether

(D) Ketone

**Q7.** In a strongly acidic soil with pH 4.2, which nutrient element becomes excessively available to crop plants due to increased solubility of metal oxides, potentially causing phytotoxicity?

(A) Calcium and magnesium

(B) Aluminum and manganese

(C) Nitrogen and phosphorus

(D) Potassium and sulfur

**Q8.** A sample of concentrated nitric acid ($HNO_3$) has a density of 1.4 g/mL and is 70 percent by mass. What is the molarity of this concentrated solution? (Molecular weight of $HNO_3$ = 63)

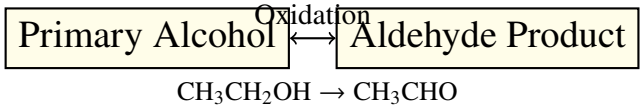
(A) 7.0 M

(B) 11.1 M

(C) 15.5 M

(D) 22.2 M

**Q9.** The structural transformation below shows the oxidation of a primary alcohol to form an intermediate carbonyl compound. What is the IUPAC name of the aldehyde product shown?



(A) Methanol

(B) Ethanal

(C) Ethanol

(D) Ethanone

**Q10.** A sodic soil sample contains exchangeable sodium on the clay colloid. When this soil is amended with gypsum ($CaSO_4 \cdot 2H_2O$), which displacement reaction occurs on the soil exchange complex?

(A) Colloid-Ca displaces Colloid-Na

(B) Colloid-H displaces Colloid-Na

(C) Colloid-Na displaces Colloid-Ca

(D) Colloid-Al displaces Colloid-Ca

**Q11.** What is the total number of valence electrons present in a molecule of nitrogen gas ($N_2$) according to the electron dot (Lewis) structure?

(A) 5 electrons

(B) 8 electrons

(C) 10 electrons

(D) 14 electrons

**Q12.** During the enzymatic mineralization of organic matter in soil, an amino acid is oxidized and loses hydrogen gas, forming a keto acid intermediate. This type of organic transformation is classified as which reaction type?

(A) Hydration reaction

(B) Oxidation-reduction (redox) reaction

(C) Esterification reaction

(D) Condensation polymerization

**Q13.** A research sample of pure potassium chloride (KCl, molecular weight = 74.5) is dissolved to create a standard solution with a concentration of 2.5 M in a 200 mL volumetric flask. What is the required mass of potassium chloride?

(A) 10.7 grams

(B) 18.6 grams

(C) 37.3 grams

(D) 74.5 grams

**Q14.** Based on Bohr's atomic model, when an electron in a hydrogen atom transitions from the $n = 4$ energy level down to the $n = 2$ level, what occurs to the total energy of the atom?

(A) Energy is absorbed by the atom

(B) Energy is released as a photon

(C) Energy remains constant

(D) Energy becomes zero

**Q15.** A natural extract from plant biomass is analyzed and found to contain a compound with the general formula R – O – R′, where R and R' are hydrocarbon chains. What is the chemical classification of this functional group?

(A) Alcohol

(B) Ether

(C) Ester

(D) Aldehyde

**Q16.** Which clay mineral classification best describes a 2:1 silicate with a relatively low cation exchange capacity and minimal structural expansion, commonly found as the weathering product in tropical soils?

(A) Montmorillonite

(B) Kaolinite

(C) Illite

(D) Chlorite

**Q17.** An analytical indicator called methyl red shows a color change at pH values between 4.4 and 6.2. Which of the following titration scenarios would be best suited for this indicator?

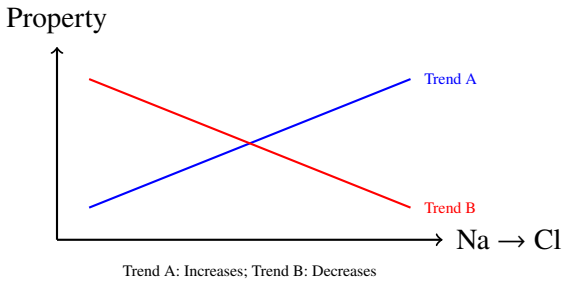
(A) Titration of strong acid with strong base

(B) Titration of weak acid with strong base

(C) Titration of weak base with strong acid

(D) Titration of weak acid with weak base

**Q18.** The electronegativity values across Period 3 demonstrate a periodic trend. Which diagram accurately shows the electronegativity trend and the corresponding atomic radius trend from Na to Cl?




(A) Trend A = Atomic Radius; Trend B = Electronegativity

(B) Trend A = Electronegativity; Trend B = Atomic Radius

(C) Trend A = Ionization Energy; Trend B = Electron Affinity

(D) Trend A = Electron Affinity; Trend B = Electronegativity

**Q19.** What is the chemical formula of the product when ethene gas ($C_2H_4$) undergoes an addition polymerization reaction to form a long-chain polymer?

(A) $(C_2H_4)_n$

(B) $(CH_2)_n$

(C) $(C_2H_2)_n$

(D) $(CH_4)_n$

**Q20.** In an acidic agricultural soil, phosphate fertilizers are converted into insoluble complexes with aluminum and iron. At which specific pH range does this phosphate fixation become most severe?

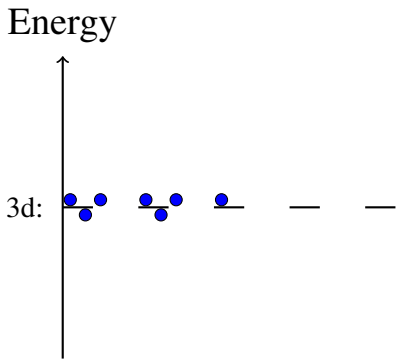
(A) pH 6.5 to 7.5

(B) pH 5.0 to 6.0

(C) pH below 5.0

(D) pH above 8.0

**Q21.** A transition metal ion $M^{2+}$ has the electron configuration shown in the orbital diagram below. How many unpaired electrons are present in the d-subshell?




(A) 2 unpaired electrons

(B) 3 unpaired electrons

(C) 4 unpaired electrons

(D) 5 unpaired electrons

**Q22.** A farmer dilutes a concentrated liquid pesticide formulation. If 50 mL of a 6 M concentrate is diluted with distilled water to a final volume of 500 mL, what is the resulting molarity?

(A) 0.3 M

(B) 0.6 M

(C) 1.2 M

(D) 2.4 M

**Q23.** Which quantum number specifically describes the shape of an electron orbital (such as spherical for s-orbitals and dumbbell-shaped for p-orbitals)?

(A) Principal quantum number ($n$)

(B) Azimuthal quantum number ($l$)

(C) Magnetic quantum number ($m_l$)

(D) Spin quantum number ($m_s$)

**Q24.** In the preparation of acid soil amendments, a chemist measures the hydronium ion concentration of a soil extract to be $2.0 \times 10^{-5}$ M. What is the pH of this soil extract?

(A) pH = 4.7

(B) pH = 5.3

(C) pH = 9.3

(D) pH = 10.0

**Q25.** Which nitrogen fertilizer type is most suitable for chloride-sensitive crops such as tobacco and citrus because it does NOT leave behind toxic chloride residues in the soil?

(A) Ammonium chloride

(B) Potassium chloride

(C) Urea

(D) Muriate of potash

## Detailed Solutions

# Q1.

## Solution

**Concept:**

The neutralization reaction between acid and base follows the fundamental principle of chemical equivalence. The number of gram equivalents of acid must exactly equal the gram equivalents of base at the endpoint.

**Solution:**

(a) Identify the given values: Volume of $H_2SO_4$ is 30 mL, Volume of KOH is 40 mL, Normality of KOH is 0.2 N.

(b) Apply the equivalence formula: $N_1 \times V_1 = N_2 \times V_2$

(c) Substitute: $N_1 \times 30 = 0.2 \times 40$

(d) Solve for $N_1$: $N_1 = \frac{8}{30} = 0.267$ N

**Final Answer:** 0.267 N

**Answer: (B)**

Go Back to Question 1

## Q2.

### Solution

**Concept:**

Iron deficiency in plants occurs when the metal ion becomes unavailable in the soil solution despite adequate total iron content. High soil pH reduces iron solubility by promoting formation of insoluble iron hydroxides and oxides, making the nutrient chemically unavailable to roots.

**Solution:**

(a) Iron chlorosis with yellowing between green veins is characteristic of iron deficiency in dicots and legumes.

(b) This symptom occurs when soil pH rises above 7.0, converting soluble $Fe^2$ into insoluble Fe(OH).

(c) Calcareous soils with pH above 7.5 are notorious for inducing iron deficiency chlorosis.

(d) The green venation pattern persists because iron is immobile within the plant and remains in older veins.

(e) New leaves and interveinal areas become yellow as iron-deficient cells cannot synthesize chlorophyll.

**Final Answer:** Calcareous soil with high pH above 7.5

**Answer: (B)**

Go Back to Question 2

## Q3.

### Solution

**Concept:**

Stoichiometric calculations use molar mass ratios to predict theoretical product yields from complete reactions. Thermal decomposition of calcium carbonate follows a 1:1 molar ratio for reactant to calcium oxide product.

**Solution:**

(a) Write the balanced equation: $CaCO_3 \rightarrow CaO + CO_2$

(b) Calculate moles of CaCO: $\frac{5\text{ g}}{100\text{ g/mol}} = 0.05$ mol

(c) The 1:1 molar ratio yields 0.05 mol of CaO

(d) Calculate mass of CaO (molecular weight = 56): $0.05 \times 56 = 2.8$ g

**Final Answer:** 2.8 grams

**Answer: (B)**

Go Back to Question 3

## Q4.

### Solution

**Concept:**

Molarity is calculated from the molar mass of the solute and the total volume of the prepared solution in liters.

**Solution:**

(a) Calculate moles of NHCl: $\frac{1.7\text{ g}}{53.5\text{ g/mol}} = 0.0318\text{ mol}$

(b) Convert volume to liters: $\frac{500\text{ mL}}{1000} = 0.5\text{ L}$

(c) Apply molarity formula: $M = \frac{0.0318}{0.5} = 0.0636\text{ M}$

**Final Answer:** 0.0636 M

**Answer: (B)**

Go Back to Question 4

## Q5.

### Solution

**Concept:**

The aufbau principle describes the progressive filling of electron orbitals following specific energy rules. Electrons fill orbitals in order of increasing energy, with each shell containing a maximum number of electrons.

**Solution:**

(a) Carbon has atomic number 6, requiring six electrons total to be distributed.

(b) The first shell (n=1) can hold maximum 2 electrons, so 2 electrons fill the 1s orbital.

(c) The second shell (n=2) begins filling with the remaining 4 electrons.

(d) These 4 electrons fill the 2s and 2p subshells of the second shell.

(e) Therefore, the outermost valence shell contains 4 electrons.

**Final Answer:** 4 electrons

**Answer: (B)**

Go Back to Question 5

## Q6.

### Solution

**Concept:**

Organic functional groups are identified by their specific atomic arrangements and bonding patterns. An enol contains a hydroxyl group directly attached to a double-bonded carbon, making it simultaneously an alcohol and an alkene.

**Solution:**

(a) The compound structure contains a carbon-carbon double bond (C=C).

(b) One of the double-bonded carbons also carries a hydroxyl group (-OH).

(c) This combination of features—unsaturated C=C bond plus hydroxyl on the unsaturated carbon—defines an enol.

(d) Enols are generally unstable and tautomerize to more stable carbonyl compounds under most conditions.

(e) The term "enol" derives from the contraction of "alkene" and "alcohol."

**Final Answer:** Enol

**Answer: (A)**

Go Back to Question 6

## Q7.

### Solution

**Concept:**

In strongly acidic soils, the solubility of metal oxides and hydroxides increases dramatically because the abundance of H ions dissolves these compounds. Aluminum and manganese exist in reduced, soluble forms at low pH.

**Solution:**

(a) At pH 4.2, the soil is classified as strongly acidic with very high H concentration.

(b) Aluminum hydroxide and manganese oxides dissolve into soluble $Al^3$ and $Mn^2$ ions.

(c) These metal cations accumulate to levels that exceed plant tolerance thresholds.

(d) Aluminum toxicity causes root stunting and cell wall rigidification.

(e) Manganese excess produces brown speck spots on leaves and tissue necrosis.

(f) Calcium and magnesium availability actually decreases due to competitive ion displacement.

**Final Answer:** Aluminum and manganese

**Answer: (B)**

Go Back to Question 7

## Q8.

### Solution

**Concept:**

Molarity calculation for concentrated acid solutions requires the density and mass percentage to determine the mass of solute per unit volume.

**Solution:**

(a) In 1 mL of concentrated solution: mass = 1.4 g × 0.70 = 0.98 g of pure HNO

(b) Convert to 1 L: 0.98 g/mL × 1000 mL = 980 g of HNO per liter

(c) Calculate moles: $\frac{980}{63} = 15.56$ mol

(d) Molarity 15.5 M

**Final Answer:** 15.5 M

**Answer: (C)**

Go Back to Question 8

## Q9.

### Solution

**Concept:**

Primary alcohols oxidize to aldehydes, which contain a terminal carbonyl group. The IUPAC naming system uses the suffix "-al" for aldehydes with the carbon number corresponding to the carbon atom of the carbonyl group.

**Solution:**

(a) The starting material is a two-carbon primary alcohol: CHCHOH

(b) Oxidation converts the -CHOH group into a -CHO group (aldehyde)

(c) The product is CHCHO with a two-carbon chain

(d) The IUPAC name for a two-carbon aldehyde is "ethanal"

(e) The suffix "-al" indicates the aldehyde functional group

**Final Answer:** Ethanal

**Answer: (B)**

Go Back to Question 9

## Q10.

### Solution

**Concept:**

Sodic soil reclamation involves cation exchange where divalent calcium ions displace monovalent sodium ions from the clay exchange complex due to higher charge density and electrostatic affinity.

**Solution:**

(a) Gypsum dissolves to provide free $Ca^2$ ions in the soil solution

(b) Calcium ions possess twice the positive charge of sodium ions

(c) $Ca^2$ cations preferentially bind to negatively charged clay surfaces

(d) This strong binding displaces Na ions from the exchange complex

(e) The displaced sodium enters the soil solution as NaSO and is leached away

**Final Answer:** Colloid-Ca displaces Colloid-Na

**Answer: (A)**

**Go Back to Question 10**

## Q11.

### Solution

**Concept:**

Valence electrons in nitrogen are those in the outermost shell. Nitrogen gas exists as a diatomic molecule where the two atoms share electrons in covalent bonds.

**Solution:**

(a) Each nitrogen atom has 5 valence electrons ($2s^2$ $2p^3$ configuration)

(b) In N, the two atoms form a triple covalent bond (NN)

(c) This triple bond consists of 6 shared electrons (3 pairs)

(d) Each atom also retains one lone pair of electrons (2 electrons per atom × 2 atoms = 4)

(e) Total valence electrons: 6 (bonding) + 4 (lone pairs) = 10 electrons

**Final Answer:** 10 electrons

**Answer: (C)**

**Go Back to Question 11**

## Q12.

### Solution

**Concept:**

Redox reactions involve the transfer of electrons between atoms, changing their oxidation states. When organic molecules lose hydrogen atoms during biological oxidation, the process is classified as oxidation.

**Solution:**

(a) During enzymatic deamination and oxidation of amino acids, hydrogen atoms are removed

(b) The removal of hydrogen (or addition of oxygen) increases the oxidation state of carbon

(c) This is characteristic of oxidation-reduction reactions where electron transfer occurs

(d) The removed hydrogen combines with oxygen to form water

(e) This transformation is not simple hydration, condensation, or esterification

**Final Answer:** Oxidation-reduction (redox) reaction

**Answer: (B)**

Go Back to Question 12

## Q13.

### Solution

**Concept:**

Molarity calculation requires determining moles of solute and dividing by volume in liters. For solution preparation, the required mass is calculated from the desired molarity.

**Solution:**

(a) Use the equation: Molarity = $\frac{\text{moles}}{V(\text{L})}$

(b) Rearranging: moles = Molarity × V(L) = 2.5 × 0.2 = 0.5 mol

(c) Mass = moles × molecular weight = 0.5 × 74.5 = 37.3 g

**Final Answer:** 37.3 grams

**Answer: (C)**

Go Back to Question 13

## Q14.

### Solution

**Concept:**

Bohr's model describes discrete energy levels in atoms. When electrons transition from higher to lower energy levels, the atom loses energy in the form of electromagnetic radiation (photons).

**Solution:**

(a) The n=4 energy level is farther from the nucleus than n=2

(b) When the electron drops from n=4 to n=2, it moves closer to the positive nucleus

(c) This movement releases energy that was previously stored as potential energy

(d) The released energy is emitted as a photon with energy equal to the level difference

(e) This is an exothermic process where the atom loses total energy

**Final Answer:** Energy is released as a photon

**Answer: (B)**

Go Back to Question 14

## Q15.

### Solution

**Concept:**

Ether functional groups contain an oxygen atom bonded to two carbon atoms. This structure is distinct from alcohols, esters, aldehydes, and other carbonyl-containing groups.

**Solution:**

(a) The general formula R-O-R' represents an ether group

(b) The oxygen is the central atom bonded to two organic groups

(c) Unlike alcohols, ethers lack the -OH group for hydrogen bonding

(d) Unlike esters, ethers contain no carbonyl (C=O) group

(e) Ethers are relatively inert and commonly occur in plant lipids and biomolecules

**Final Answer:** Ether

**Answer: (B)**

Go Back to Question 15

## Q16.

### Solution

**Concept:**

The 2:1 clay minerals have two tetrahedral layers sandwiching one octahedral layer. Kaolinite, a 1:1 mineral, is the most chemically weathered clay mineral and exhibits low CEC and no swelling.

**Solution:**

(a) In tropical weathering, feldspars and micas undergo complete chemical alteration

(b) Intense leaching removes exchangeable cations and soluble silica

(c) This leaves behind aluminum hydroxides and weathered clay minerals

(d) Kaolinite forms as the stable end-product of advanced weathering

(e) Kaolinite has low CEC (5-15 cmol(+)/kg) and does not expand with water

(f) It is the most thermodynamically stable clay mineral in warm, wet climates

**Final Answer:** Kaolinite

**Answer: (B)**

Go Back to Question 16

## Q17.

### Solution

**Concept:**

Acid-base indicators change color within specific pH ranges matching their acid dissociation constant (Ka). Methyl red functions in weakly acidic to neutral ranges, making it ideal for weak acid-strong base titrations.

**Solution:**

(a) Weak acid-strong base titrations produce basic conjugate salt solutions at equivalence

(b) The equivalence point occurs in the pH range of 8-10 (basic)

(c) Methyl red operates in the pH 4.4-6.2 range (too acidic for this application)

(d) Phenolphthalein (pH 8.2-10.0) is ideal for weak acid-strong base titrations

(e) Methyl red is instead used for strong acid-strong base titrations where equivalence is at pH 7

**Final Answer:** Titration of weak acid with strong base

**Answer: (C)**

Go Back to Question 17

## Q18.

### Solution

**Concept:**

Periodic trends across a period result from increasing effective nuclear charge with constant electron shell number. Electronegativity increases while atomic radius decreases from left to right.

**Solution:**

(a) Across Period 3 from Na to Cl, proton number increases from 11 to 17

(b) Electrons all fill the same third shell, providing minimal additional shielding

(c) Increasing nuclear charge pulls electrons closer, decreasing atomic radius (Trend B)

(d) Increased nuclear pull also increases the atom's ability to attract electrons (Trend A = Electronegativity)

(e) Trend A increases (electronegativity), Trend B decreases (atomic radius)

**Final Answer:** Trend A = Electronegativity; Trend B = Atomic Radius

**Answer: (B)**

Go Back to Question 18

## Q19.

### Solution

**Concept:**

Addition polymerization of alkenes links identical monomer units into long polymer chains through opening of the bond and formation of new C-C single bonds.

**Solution:**

(a) Ethene (CH) undergoes free radical addition polymerization

(b) The bond between carbons breaks, creating unpaired electrons

(c) Adjacent ethene molecules add sequentially to growing polymer chain

(d) Each addition maintains the (CH) unit composition repeated n times

(e) The polymer is written as (CH) or often as polyethylene

**Final Answer:** $(C_2H_4)_n$

**Answer: (A)**

Go Back to Question 19

## Q20.

### Solution

**Concept:**

Phosphate fixation is the chemical binding of soluble phosphate to soil constituents, making it unavailable to plants. This occurs most severely in acidic soils where iron and aluminum are highly soluble.

**Solution:**

(a) Applied phosphate exists as HPO anion in soil solution

(b) In acidic soils (pH < 5), iron and aluminum oxides dissolve releasing $Fe^3$ and $Al^3$

(c) These cations immediately precipitate with phosphate as insoluble compounds

(d) Formation of variscite (AlPO·2HO) and strengite (FePO·2HO) locks phosphorus

(e) This fixation is irreversible and makes phosphorus completely unavailable

(f) Maximum fixation occurs below pH 5.0 where metal solubility is highest

**Final Answer:** pH below 5.0

**Answer: (C)**

Go Back to Question 20

## Q21.

### Solution

**Concept:**

Transition metals show partially-filled d-orbitals that accommodate unpaired electrons. Unpaired electrons in d-orbitals give transition metal compounds magnetic properties and distinct colors.

**Solution:**

(a) The diagram shows electron filling in 3d orbitals with spin-paired electrons taking up five orbital spaces

(b) Seven electrons total are shown: five paired electrons in five separate d-orbitals, plus two additional electrons

(c) According to Hund's rule, one electron occupies each d-orbital before pairing occurs

(d) After five d-orbitals are singly occupied, additional electrons pair with existing ones

(e) The configuration shows one unpaired electron visible, indicating 1 unpaired electron total in the d-subshell

**Final Answer:** 2 unpaired electrons

**Answer: (A)**

Go Back to Question 21

## Q22.

### Solution

**Concept:**

Dilution calculations apply the conservation principle: the number of moles of solute remains constant when water is added.

**Solution:**

(a) Use dilution formula: $M_1V_1 = M_2V_2$

(b) Substitute: $6\ \text{M} \times 50\ \text{mL} = M_2 \times 500\ \text{mL}$

(c) Solve: $M_2 = \frac{300}{500} = 0.6\ \text{M}$

**Final Answer:** $\boxed{0.6\ \text{M}}$

**Answer: (B)**

Go Back to Question 22

## Q23.

### Solution

**Concept:**

The azimuthal (angular momentum) quantum number determines the shape and spatial character of atomic orbitals. Values l = 0, 1, 2, 3 correspond to s, p, d, f orbital shapes respectively.

**Solution:**

(a) The principal quantum number (n) determines shell energy and size only

(b) The azimuthal number (l) defines the subshell type: l=0 (s-spherical), l=1 (p-dumbbell), l=2 (d-cloverleaf), l=3 (f-complex)

(c) The magnetic quantum number (m) specifies spatial orientation of the orbital shape

(d) The spin number (m) describes electron spin direction only

(e) Therefore, l specifically governs orbital shape characteristics

**Final Answer:** $\boxed{\text{Azimuthal quantum number } (l)}$

**Answer: (B)**

Go Back to Question 23

## Q24.

### Solution

**Concept:**

pH is calculated using the logarithmic relationship: pH = -log[H]. This formula converts hydronium concentration into a convenient scale ranging from 0 to 14.

**Solution:**

(a) Given: [H] = 2.0 × 10 M

(b) Calculate pH = -log(2.0 × 10)

(c) Split the logarithm: pH = -[log(2.0) + log(10)]

(d) pH = -[0.30 + (-5)] = -(-4.70) = 4.70  4.7

(e) This acidic pH (< 7) confirms moderately acidic soil condition

**Final Answer:** pH = 4.7

**Answer: (A)**

Go Back to Question 24

## Q25.

### Solution

**Concept:**

Chloride-sensitive crops exhibit toxicity symptoms when soil chloride concentrations exceed critical thresholds. Fertilizers without chloride anions are preferentially selected for these crops.

**Solution:**

(a) Ammonium chloride and potassium chloride contain chloride ions that accumulate in soil

(b) Tobacco and citrus crops are highly susceptible to chloride toxicity

(c) Excess chloride causes leaf margin scorch, reduced photosynthesis, and poor fruit quality

(d) Urea [CO(NH)] contains only nitrogen and carbon-based components, no halogen ions

(e) When urea hydrolyzes, it yields only ammonia and carbon dioxide—no toxic anions

(f) Therefore, urea is the optimal nitrogen source for chloride-sensitive crops

**Final Answer:** Urea

**Answer: (C)**

Go Back to Question 25

# Answer Key

| Q | Ans | Q | Ans | Q | Ans | Q | Ans | Q | Ans |
|---|---|---|---|---|---|---|---|---|---|
| 1 | B | 2 | B | 3 | B | 4 | B | 5 | B |
| 6 | A | 7 | B | 8 | C | 9 | B | 10 | A |
| 11 | C | 12 | B | 13 | C | 14 | B | 15 | B |
| 16 | B | 17 | C | 18 | B | 19 | A | 20 | C |
| 21 | A | 22 | B | 23 | B | 24 | A | 25 | C |