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XI - BOTANY SUPPLY PREPARATION PAPER

Date: _____ **Duration:** _____ **Total Marks:** _____

SECTION A

> Attempt any NINE questions. All carry equal marks.

1. Why chloroplast is called an energy converting organelle?

Chloroplast converts light energy into chemical energy (ATP & NADPH) during photosynthesis, which is then used to synthesize glucose.

OR

Discuss AIDS, Hepatitis, Poliomyelitis.

- **AIDS:** Causative agent – HIV; Symptoms – weight loss, fever, immune failure; Transmission – blood, sexual contact
- **Hepatitis:** Causative agent – Hepatitis virus; Symptoms – jaundice, fatigue; Transmission – contaminated water/food
- **Poliomyelitis:** Causative agent – Polio virus; Symptoms – muscle weakness, paralysis; Transmission – fecal-oral route

2. Differentiate Gram-positive & Gram-negative bacteria.

Gram-positive	Gram-negative
Thick peptidoglycan layer	Thin peptidoglycan layer
No outer membrane	Has outer membrane
Retain crystal violet stain	Do not retain stain (appear pink)

OR

How plants cope with high temperature?

- By transpiration cooling
- Producing heat-shock proteins
- Reducing leaf size to minimize water loss

---

3. Why ATP is called "energy currency" of the cell?

ATP stores and transfers chemical energy within cells for various metabolic processes.

OR

Differentiate parenchyma, collenchyma, sclerenchyma.

- **Parenchyma:** Living, thin-walled, storage
- **Collenchyma:** Living, thick-walled, support in growing parts
- **Sclerenchyma:** Dead, thick-walled, rigid support

---

4. Difference: Prokaryotic & Eukaryotic cells.

Prokaryotic	Eukaryotic
No nucleus	True nucleus
No membrane-bound organelles	Has organelles
Smaller (1-10 μm)	Larger (10-100 μm)

OR

State ATP & NADPH required for carbon fixation.

- 1 carbon: 3 ATP, 2 NADPH
- 3 carbon: 9 ATP, 6 NADPH
- 12 carbon: 36 ATP, 24 NADPH

---

5. Why CAM plants close stomata during the day?

To reduce water loss through transpiration in hot, dry conditions.

OR

Why Calvin cycle called C_3 cycle?

Because the first stable product is a 3-carbon compound (3-phosphoglycerate).

---

6. List four adaptations of xerophytes.

- Thick cuticle
- Reduced leaf size
- Deep root systems
- Sunken stomata

OR

Why insectivorous plants eat insects?

To obtain nitrogen and minerals which are deficient in their soil habitat.

---

7. Why mitochondria are called "powerhouse"?

Because they produce ATP through cellular respiration.

OR

Mention types of anaerobic respiration.

- Alcoholic fermentation (produces ethanol + CO_2)
- Lactic acid fermentation (produces lactic acid)

---

8. Significance of differential staining.

It helps distinguish between different types of bacteria/microorganisms based on cell wall structure.

OR

Why cold treatment for seed germination?

To break seed dormancy through stratification.

---

9. Why photorespiration is wasteful?

It consumes ATP and oxygen without producing sugar, and releases CO_2.

OR

Living & non-living characteristics of virus.

- **Living:** Can reproduce (in host), genetic material
- **Non-living:** No metabolism, cannot reproduce independently

---

10. Discuss bacterial diseases in plants.

- **Citrus canker:** Symptoms – lesions on leaves; Treatment – copper sprays; Prevention – sanitation
- **Fire blight:** Symptoms – wilted branches; Treatment – pruning; Prevention – resistant varieties

OR

Why photosynthesis is a redox process?

Because water is oxidized (loses electrons) and CO_2 is reduced (gains electrons).

---

11. Why plasma membrane is selectively permeable?

It allows only specific substances to pass through while restricting others.

OR

Classify bacteria by shape.

- Cocci (spherical)
- Bacilli (rod-shaped)
- Spirilla (spiral)

12.

Role of antenna pigments in photosynthesis

They capture light energy and transfer it to the reaction center.

OR

Polyphyletic Kingdom

Protista – because it contains organisms that do not share a common ancestor.

13.

Deficiency symptoms

- **Nitrogen:** Chlorosis (yellowing) of leaves
- **Phosphorus:** Purple discoloration
- **Zinc:** Rosette formation
- **Potassium:** Leaf margin burning

14.

Bacterial growth & phases

Bacterial growth: Increase in number of cells

Phases:

1. Lag phase
2. Log phase
3. Stationary phase
4. Death phase

OR

Why mineral nutrients necessary?

For plant growth, development, and metabolic processes.

15.

Xylem & phloem components

Xylem:

- Tracheids
- Vessels
- Xylem parenchyma
- Xylem fibers

Phloem:

- Sieve tubes
- Companion cells
- Phloem fibers
- Phloem parenchyma

Water pathways: Apoplast, symplast, transmembrane

16.

Nutrition & reproduction in bacteria

Nutrition types:

- Autotrophic (photo/chemo)
- Heterotrophic (saprophytic/parasitic)

Reproduction:

- Asexual – binary fission
- Genetic recombination – transformation, transduction, conjugation

---

OR

Lytic vs Lysogenic cycle

- **Lytic:** Virus immediately replicates and lyses host cell
- **Lysogenic:** Viral DNA integrates into host genome and replicates with it

[Diagram would show: Attachment → Penetration → Integration → Replication → Lysis]

17.

Light-independent reactions of photosynthesis

Location: Stroma of chloroplast

Process: Calvin cycle uses ATP and NADPH from light reactions to fix CO_2 into glucose

Steps:

1. Carbon fixation (RuBisCO fixes CO_2 to RuBP)
2. Reduction (3-PGA → G3P using ATP & NADPH)
3. Regeneration (RuBP is regenerated)

OR

Source to sink movement & Munch hypothesis

- **Source:** Photosynthetic tissues (leaves)
- **Sink:** Storage organs (roots, fruits)

Munch hypothesis: Osmotic pressure gradient drives phloem sap from source to sink

---

18.

Cellular respiration & Glycolysis

Cellular respiration: Process of breaking down glucose to produce ATP

Glycolysis steps:

1. Glucose → Glucose-6-phosphate
2. Fructose-6-phosphate → Fructose-1,6-bisphosphate
3. Splitting into two G3P molecules
4. Production of pyruvate, ATP, and NADH

Net gain: 2 ATP + 2 NADH per glucose

OR

Plant categories based on water availability

- **Hydrophytes** – aquatic plants
- **Xerophytes** – dry habitat plants
- **Mesophytes** – moderate water conditions
- **Halophytes** – saline habitat plants

19.

Plasma membrane structure & functions

Structure: Fluid mosaic model – phospholipid bilayer with embedded proteins

Properties: Selectively permeable, fluid nature

Functions:

- Transport of substances
- Cell signaling
- Cell recognition

OR

Phytohormones

- **Auxins** – cell elongation
- **Gibberellins** – stem growth
- **Cytokinins** – cell division
- **Abscisic acid** – stress response
- **Ethylene** – fruit ripening

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XI-CHEMISTRY SUPPLY PREPARATION PAPER

Date: _____ Duration: _____ Max Marks: _____

SECTION A

*Attempt any **NINE** questions. All carry equal marks.*

2(i) Define (Any 4):

Activated complex:

> A temporary, high-energy transition state formed during a chemical reaction.

Dipole moment:

> A measure of the polarity of a bond/molecule; product of charge and distance between charges.

Allotropy:

> The existence of an element in more than one physical form (e.g., diamond, graphite).

Bond energy:

> The energy required to break a chemical bond.

Molar volume:

> The volume occupied by one mole of a substance (gas at STP ≈ 22.4 dm^3).

Amphoteric substances:

> Substances that can act as both acids and bases (e.g., Al_2O_3, H_2O).

Molecularity:

> The number of molecules participating in an elementary reaction.

Percentage yield:

> (Actual yield / Theoretical yield) × 100

2(ii)

Give Reasons (Any 4):

- Glycerin distilled under reduced pressure: To lower its boiling point and prevent decomposition.
- Liquid rises in a capillary tube: Due to adhesive forces between liquid and tube (capillary action).
- Density of H_2O highest at 4°C: Hydrogen bonding causes water molecules to form an open structure; maximum density occurs at 4°C.
- CO_2 has zero dipole moment: Linear geometry results in symmetrical charge distribution.
- Powdered Zn reacts faster than lump Zn: Greater surface area increases reaction rate.
- Falling drop of liquid is spherical: Due to surface tension minimizing surface area.
- Oil insoluble in water but soluble in hexane: "Like dissolves like" – oil is nonpolar.
- H–Cl bond shorter than Cl–Cl: Higher electronegativity difference and stronger bond in HCl.

2(iii)

Limiting Reactant & Stoichiometry

$3NaOH + H_3PO_4 \rightarrow Na_3PO_4 + 3H_2O$

Molar masses: NaOH = 40 g/mol, H_3PO_4 = 98 g/mol, Na_3PO_4 = 164 g/mol

Moles NaOH = 100/40 = 2.5 mol

Moles H_3PO_4 = 100/98 ≈ 1.02 mol

From equation: 3 mol NaOH react with 1 mol H_3PO_4

NaOH required for 1.02 mol H_3PO_4 = 3.06 mol (we have only 2.5 mol)

✅ **NaOH is limiting reactant**

Moles Na_3PO_4 produced = 2.5/3 ≈ 0.833 mol

Mass Na_3PO_4 = 0.833 × 164 ≈ 136.6 g

OR

% Yield Calculation

$2Al + 3S \rightarrow Al_2S_3$

Molar mass Al = 27 g/mol, Al_2S_3 = 150 g/mol

Moles Al = 135/27 = 5 mol

Theoretical moles Al_2S_3 = 5/2 = 2.5 mol

Theoretical mass = 2.5 × 150 = 375 g

% Yield = (300/375) × 100 = 80%

2(iv)

Raoult's Law & Vapour Pressure Lowering

Raoult's Law:

$$P = X_{solvent} \cdot P^\circ$$

Moles glucose = 0.15, Moles water = 5.8

Total moles = 5.95

Mole fraction water = 5.8/5.95 ≈ 0.9748

Vapour pressure lowering:

$$\Delta P = P^\circ - P = P^\circ(1 - X_{solvent}) = 17.5 \times (1 - 0.9748) \approx 0.441 \text{ torr}$$

Ideal vs. Non-Ideal Solutions:

- **Ideal:** Follows Raoult's law, $\Delta H_{mix} = 0$, $\Delta V_{mix} = 0$
- **Non-Ideal:** Deviates from Raoult's law, $\Delta H_{mix} \neq 0$, $\Delta V_{mix} \neq 0$

2(v)

Differentiate Any Two:

VBT	MOT
Localized electrons, overlapping atomic orbitals	Molecular orbitals from combination of AOs, includes bonding/antibonding

Crystalline Solids	Amorphous Solids
Definite geometry, sharp m.p., anisotropic	Irregular structure, no sharp m.p., isotropic

Order of Reaction	Molecularity
Experimental, can be fractional	Theoretical, integer, for elementary steps

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2(vi)

Acid-Base Concepts

Lewis Acid: Electron pair acceptor (e.g., H^+, BF_3)

Lewis Base: Electron pair donor (e.g., NH_3, H_2O)

Bronsted-Lowry Acid: Proton donor (HCl)

Bronsted-Lowry Base: Proton acceptor (NH_3)

Reaction: $HCl + H_2O \rightarrow H_3O^+ + Cl^-$

Acid: HCl, Base: H_2O

Conjugate pair: HCl/Cl^- and H_2O/H_3O^+

Conjugate base of HSO_4^-: SO_4^{2-}

1. **Gas Volume Calculation**

   $2KNO_3 \rightarrow 2KNO_2 + O_2$

   Molar mass KNO_3 = 101 g/mol

   Moles KNO_3 = 100/101 ≈ 0.99 mol

   Moles O_2 produced = 0.99/2 ≈ 0.495 mol

   Using PV = nRT:

   T = 39°C = 312 K, P = 765/760 ≈ 1.006 atm

   V = nRT/P = (0.495 × 0.0821 × 312) / 1.006 ≈ 12.6 dm^3

2. **Graham's Law / Dalton's Law**

   a) Graham's Law:

   $$r_1/r_2 = \sqrt{M_2}/\sqrt{M_1}$$

   Lighter gases diffuse faster.

OR

   b) **Moles of Oxygen Collected Over Water** P_{total} = 762 torr, P_{H_2O} = 22.4 torr

   P_{O_2} = 762 – 22.4 = 739.6 torr = 739.6/760 ≈ 0.973 atm

   V = 300 cm^3 = 0.3 dm^3, T = 24°C = 297 K

   $n_{O_2} = PV/RT = (0.973 \times 0.3) / (0.0821 \times 297) \approx 0.012$ mol

3. **MOT Diagram for O_2 or N_2**

   a) **O_2 MOT:** Bond order = (8 – 4)/2 = 2

   Paramagnetic (2 unpaired electrons in π* orbitals)

   b) **N_2 MOT:** Bond order = (8 – 2)/2 = 3

   Diamagnetic (all electrons paired)

OR

   c) **Molar Mass from Diffusion**

$r_{gas}/r_{CH_4} = \sqrt{M_{CH_4}}/\sqrt{M_{gas}}$

Given: $r_{gas} / r_{CH_4} = 2.83$

$(2.83)^2 = M_{CH_4} / M_{gas}$

$8.0 = 16 / M_{gas}$

$M_{gas} = 16 / 8 = 2$ g/mol (likely H_2)

4. **Surface Tension & Viscosity**

a) **Surface Tension:** Force per unit length acting perpendicular on liquid surface (N/m). Factors: Temperature (↓ with T), impurities, nature of liquid.

b) **Viscosity:** Resistance to flow; decreases with temperature due to increased kinetic energy overcoming intermolecular forces. Honey more viscous than water due to stronger intermolecular forces and complex structure.

5. **Pauli's Principle & (n+l) Rule**

a) **Pauli's Exclusion Principle:** No two electrons can have same set of four quantum numbers.

b) **(n+l) Rule:** Orbital with lower (n+l) filled first; if equal, lower n first.

c) **Electronic Configuration:**

- Ca^{2+} (Z=20): $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6$
- Br^- (Z=35): $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^{10}\ 4p^6$

d) **σ vs. π Bonds:**

- σ: Head-on overlap, stronger
- π: Sideways overlap, weaker

p-p σ stronger than s-s or s-p due to better overlap.

6. **Liquid Air & Joule-Thomson Effect**

a) **Liquid Air:** Mixture of liquefied gases from air; uses:

- Source of O_2, N_2, Ar
- Cryogenics
- Rocket fuel

b) **Joule-Thomson Effect:** Temperature change when gas expands throttling; cooling for most gases except H_2, He at room temp. Liquefaction Methods: Linde's process (compression, cooling, expansion)

7. **Note on Quantum Numbers / Buffer Solution**

a) **Quantum Numbers:**

- Principal (n) – energy level
- Azimuthal (l) – subshell

- Magnetic (m_l) – orbital orientation
- Spin (m_s) – electron spin

2(ix)

Surface Tension & Viscosity

- **Surface Tension:** Force per unit length acting perpendicular on liquid surface (N/m).
- **Factors:** Temperature (↓ with T), impurities, nature of liquid.
- **Viscosity:** Resistance to flow; decreases with temperature due to increased kinetic energy overcoming intermolecular forces.
- Honey is more viscous than water due to stronger intermolecular forces and complex structure.

2(x)

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2(xi)

Liquid Air & Joule-Thomson Effect

- **Liquid Air:** Mixture of liquefied gases from air; uses:
  - Source of O_2, N_2, Ar
  - Cryogenics
  - Rocket fuel
- **Joule-Thomson Effect:** Temperature change when gas expands throttling; cooling for most gases except H_2, He at room temp.
- **Liquefaction Methods:** Linde's process (compression, cooling, expansion)

2(xii)

Note on Quantum Numbers / Buffer Solution

Quantum Numbers:

- Principal (n) – energy level
- Azimuthal (l) – subshell
- Magnetic (m_l) – orbital orientation
- Spin (m_s) – electron spin

OR

Buffer Solution:

- Resists pH change; contains weak acid/base and its salt.
- **Buffer Action:** Neutralizes added H^+/OH^-
- **Applications:**
  - Biological systems (blood pH ~7.4)
  - Industrial processes

2(xiii)
Rate & Order of Reaction

Rate Law: $R = k [A][B]$

$k = R / ([A][B]) = 3.8\times10^{-4} / (0.43 \times 0.78) \approx 1.13\times10^{-3}\ M^{-1}s^{-1}$

Unit for second order: $M^{-1}s^{-1}$

Factors Affecting Rate:

- Concentration, temperature, catalyst, surface area, nature of reactants

2(xiv)
Covalent Bond Strength & Catalysis

Parameters for Covalent Bond Strength:

- Bond energy
- Bond length
- Electronegativity difference

Catalysis:

- **Homogeneous:** Catalyst and reactants in same phase
- **Heterogeneous:** Catalyst in different phase

3(a)
Bohr's Atomic Model & Defects

Postulates:

- Electrons revolve in stationary orbits
- Angular momentum quantized: $mvr = n\hbar$
- Energy emitted/absorbed when electron jumps orbits

Defects:

- Only for H-like atoms
- Violates uncertainty principle
- Can't explain fine structure

Radius Expression:

$r_n = n^2h^2 / (4\pi^2mZe^2)$

Energy of Photon:

$\Delta E = 13.6\ (1/n_1^2 - 1/n_2^2)$ eV

Wave Number (n=5→3):

$\tilde{\nu} = R(1/3^2 - 1/5^2) = 1.097\times10^7\ (1/9 - 1/25) \approx 7.8\times10^5\ m^{-1}$

3(b)
Hybridization & Molecular Shapes

Hybridization: Mixing of atomic orbitals to form new hybrid orbitals

- **Ethylene (C_2H_4):** sp^2 hybridized, trigonal planar, bond angle ~120°
- **Acetylene (C_2H_2):** sp hybridized, linear, bond angle 180°

4(a)
Le Chatelier's Principle & Applications

Principle: System at equilibrium adjusts to counteract applied change.

Haber Process ($N_2 + 3H_2 \rightleftharpoons 2NH_3$):

- Increase pressure → more NH_3
- Remove NH_3 → more production
- Low temp favored (exothermic) but slow rate → moderate temp used

Ostwald Process ($2NO + O_2 \rightleftharpoons 2NO_2$, ΔH = -114 kJ):

- Increase pressure → right
- Add O_2 → right

- Remove NO → left
- Increase temp (endothermic right) → left (since exothermic left)

OR

Law of Mass Action & Kc/Kp

$Kp = Kc\ (RT)^{\Delta n}$

For $CH_4 + 2H_2S \rightleftharpoons CS_2 + 4H_2$: $\Delta n = (5 - 3) = 2$

$Kp = 4.2\times10^{-2} \times (0.0821 \times 1000)^2 \approx 28.3$

5(a)
Ideal Gas & Real Gas Behavior

Ideal Gas: $PV = nRT$

Real Gas Deviations:

- Molecular volume significant at high P
- Intermolecular forces significant at low T

Density & Molar Mass:

$P\ V = (m/M)\ R\ T \Rightarrow M = (mRT) / (PV) = (dRT) / P$

Given: $d = 1.88\ g/dm^3$, $T = 300\ K$, $P = 1\ atm$

$M = (1.88 \times 0.0821 \times 300) / 1 \approx 46.3\ g/mol$

OR

van der Waals Equation

$(P + an^2/V^2)(V - nb) = nRT$

For O_2: n=2, $V=15.5\ dm^3$, T=310 K, a=1.36, b=0.0318

Ideal: $P = nRT/V = (2 \times 0.0821 \times 310) / 15.5 \approx 3.28\ atm$

Real: Solve van der Waals → $P \approx 3.18\ atm$

5(b) X-rays & Crystal Lattice

X-rays: High-energy EM radiation; produced when high-speed electrons hit metal target.

Properties:

- Penetrating
- No charge
- Affect photographic plates

Uses:

- Medical imaging
- Crystallography

OR

Unit Cell & Lattice Energy

- **Unit Cell:** Smallest repeating unit of crystal
- **Crystal Lattice:** 3D arrangement of points
- **Lattice Energy:** Energy released when gaseous ions form crystal

NaCl Unit Cell:

- 4 Na^+ and 4 Cl^- ions per unit cell (FCC structure)

5(b) X-rays & Crystal Lattice

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Properties:

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- No charge
- Affect photographic plates

Uses:

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XI - COMPUTER SUPPLY PREPARATION PAPER

Date: _____ **Duration:** _____ **Total Marks:** _____

SECTION A

Q2. (i) What do a compiler and an interpreter do? Distinguish between them.

OR

(i) What is meant by a BUS? Name its types. Describe any two.

Q3. (i) Distinguish between Synchronous & Asynchronous Transmission.

OR

(i) How is cache memory different from RAM? Name three types of secondary storage.

Q4. (i) Convert the following: $1001_2 = (?)_{10}$

OR

(i) Name types of computers according to size & speed. Draw & label the block diagram of a Digital Computer.

Q5. (i) Why is system software necessary for a computer system? Differentiate between system & application software.

OR

(i) Define the term "problem solving." Explain any one step of the problem-solving process.

Q6. (i) Define CPU. Draw its diagram. What is the use of the ALU?

OR

(i) How can computers be useful in medical science? How is the Internet useful in the field of Education?

Q7. (i) What is a Network Protocol? Name any three. Describe any one.

OR

(i) Draw and label the data processing cycle.

Q8. (i) Make the truth table for the Boolean Expression: $(A+B)' \cdot (C+D)'$.

OR

(i) Simplify the given expression by using a K-map. (A sample expression like F(A,B,C)= Σ(0,2,4,5,6) would be needed here)

Q9. (i) Define any THREE of the following: Router, Bridge, Gateway, MODEM, Bar Code Reader, Modulation.

OR

(i) Name any three devices that operate in Simplex, Half-Duplex, and Full-Duplex modes.

Q10. (i) How would you define a Metropolitan Area Network (MAN)?

OR

(i) What are peripheral and pointing devices? Describe some examples.

Q11. (i) Differentiate between Analogue & Digital Signals.

OR

(i) What do you mean by computer crime? Mention preventive measures.

Q12. (i) Define four advantages of fiber optics cable.

OR

(i) Explain the basic elements of a data communication system.

Q13. (i) Why is RAM a temporary storage? Why is ROM called non-volatile memory?

OR

(i) Write down the full form of any THREE: BIOS, HTTPS, ASCII, GUI, HTML.

Q14. (i) Name any three magnetic storage media.

OR

(i) What is meant by an information network? Write the advantages of a network.

Q15. (i) Draw the logic circuit for: $(A+B)\cdot(A'+C)$

OR

(i) State copyright laws along with their advantages.

Q16. (i) What is the main logical difference between an AND gate and an OR gate?

OR

(i) What is computer security? What security techniques are used to reduce risks?

Q3. Explain all the five generations of programming languages.

OR

Q4. What is network topology? Discuss its types. Describe the working of LAN topologies with diagrams. Why is Star topology considered more reliable? Give any five reasons.

Q4. Define scanning devices and discuss any three important types.

OR

Q5. Explain the different types of communication media/channels used in data communication. Discuss the various transmission modes.

Q5. What is a computer virus? Explain its different types.

OR

Q6. Define the OSI model in detail. Draw the layer cake of the OSI model and describe the function of each layer.

Q6. What is an operating system? Explain the functions performed by an operating system.

OR

Q7. What is IoT? Name any three devices. Explain the role of IoT & IT in our society and describe the importance of IT in every field.

Q7. What is a register? Explain the functions of various types of CPU registers.

OR

Q8. Differentiate between Impact and Non-Impact Printers. Discuss different types of printers.

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XI-ENGLISH SUPPLY PREPARATION PAPER

Date: _____ **Duration:** _____ **Total Marks:** _____

SECTION A

SUB-SECTION I: READING COMPREHENSION

1. Quaid-e-Azam's Biggest Curse

> According to Quaid-e-Azam, the biggest curse is bribery and corruption, which destroy the moral fabric of society and hinder national progress.

OR

1. Message of "Self-Reliance"

> The essay "Self-Reliance" by Ralph Waldo Emerson emphasizes the importance of trusting oneself, thinking independently, and not relying on others for validation or direction.

OR

1. Central Theme of "Struggle of an Education"

> The central theme is the power of determination and resilience in overcoming social and economic barriers to gain an education.

2. Job vs Career

> A job is temporary work for earning money, while a career is a long-term pursuit of a passionate and progressive professional path.

OR

2. Stephen Leacock's Mistake with the Cheque

> He mistakenly wrote the cheque for a much larger amount than intended due to overconfidence and carelessness.

OR

2. Lucky and Unlucky According to the Maxim

> A lucky person makes the best of every situation, while an unlucky person complains and fails to recognize opportunities.

3. Technology as a Boon for Students

> Technology provides access to vast resources, enables interactive learning, and supports remote education, making studying more efficient and engaging.

OR

3. Benefits of E-commerce

> E-commerce offers convenience, a wider range of choices, competitive pricing, and 24/7 accessibility for shoppers worldwide.

OR

3. Mathilde's Sacrifices in Vain

> Mathilde sacrificed her youth and comfort to repay a debt for a fake necklace, making her sacrifices meaningless and ironic.

4. Inspiration to Go to Hampton

> The boy was inspired by his strong desire for education and a better future, despite facing racial and financial hardships.

OR

4. Singapore as "City of Lions" & "Shopper's Paradise"

> It is called "City of Lions" due to its name's origin (Singa Pura), and "Shopper's Paradise" because of its numerous malls and tax-free shopping.

OR

4. Technology Securing Humans from Calamities

> Technology provides early warning systems, disaster management tools, and communication channels that save lives during natural disasters.

SUB-SECTION II: POETRY

5. People's Belief About Lucy Gray

> People still believe Lucy Gray is alive because they see her footprints in the snow and think she became a part of nature.

OR

5. Tragedy of Lucy Gray

> She died in a snowstorm while trying to help her mother, becoming lost and eventually frozen.

OR

5. Wotton's Happy Man's Routine

> He spends his days in honest labor and his nights in peaceful rest, free from greed and ambition.

6. Difficulties Faced by Khahoris

> They face extreme heat, physical exhaustion, and the constant struggle of digging for water in barren lands.

OR

6. Reward of a Khahori

> After hard work, a Khahori gets the reward of finding water, which is a source of life and hope for the community.

OR

6. Irony in "Ozymandias"

> The irony is that the mighty king's statue lies in ruins, showing that power and pride are temporary and meaningless over time.

7. Answers to the King's Three Questions

> The right time: Now
>
> The most important person: The one you are with
>
> The most important thing: To do good
>
> These answers were given by a hermit.

OR

7. Main Idea of "Don't Quit" or "Sur Khahori"

> The main idea is to persevere through difficulties and not give up, as success often comes after persistent effort.

OR

7. "Good Timber" as a Metaphor

> Douglas Malloch uses "good timber" to symbolize strength through struggle, just as strong trees grow through hardship.

OR

7. Shepherd's Refusal of the King's Offer

> The shepherd refused because he valued his simple, honest life more than power or wealth.

8. How Khahoris Experience Sleep

> They sleep under the open sky, exhausted but hopeful, dreaming of water and a better tomorrow.

OR

8. Lucy Gray as a "Living Child"

> The poet called her a living child because her spirit and story continue to live in the memories of the people.

OR

8. "Having Nothing Yet Hath All"

> This means a person who is content and spiritually rich possesses everything, even without material wealth.

SUB-SECTION III: PLAY – A VISIT TO A SMALL PLANET

9. Kreton's Reason to Visit Earth

> Kreton visited Earth out of curiosity to study human behavior and their primitive civilization.

OR

9. How Kreton Foils General Powers

> Kreton uses his advanced mental powers to control minds and disable weapons, making confinement impossible.

OR

9. Satire on American Society

> The play satirizes American militarism, media sensationalism, and social hypocrisy.

10. Spelding's Dislike for Ellen and John's Relationship

> Spelding dislikes it because John is not from a wealthy or influential family, and he wants Ellen to marry someone of higher status.

OR

10. Depiction of Media in the Play

> The media is shown as intrusive, sensationalist, and irresponsible, more interested in ratings than truth.

OR

10. Kreton's Criticism of Human Nature

> Kreton criticized humans for their violence, pride, and inability to live peacefully.

11. Who is Aide?

> Aide is General Powers' assistant, who follows orders without question and represents blind obedience to authority.

OR

11. Kreton's Extraordinary Powers

> He can read minds, control objects and people, become invisible, and travel through time and space.

OR

11. Favorite Character and Reason

> Kreton – because he is witty, insightful, and exposes human follies with humor and intelligence.

12. Why Spelding Wants Kreton to Stay

> Spelding sees Kreton as a source of fame and profit, hoping to benefit from his uniqueness.

OR

12. Kreton's View of Human Civilization

> He calls it primitive because humans are still engaged in wars, greed, and destructive behavior despite their technological progress.

OR

12. Reactions to Kreton's Visit

> Spelding: Excited for fame
>
> General Powers: Suspicious and hostile
>
> Ellen: Curious and friendly
>
> John: Logical and cautious

SUB-SECTION IV: GRAMMAR

13. Change the Narration

a) The teacher prayed that I might always stay honest in life.

b) The stranger requested the policeman to help him find his lost bag.

c) Ahmed exclaimed with joy that they had won the championship.

d) Sarah asked Ali if he had completed his homework on time.

14. Change the Voice

a) The results will be announced tomorrow.

b) Can the project be completed by Sarah before the deadline?

c) The traffic rules must be followed.

d) Let the door be closed immediately.

15. Spot the Errors and Correct

~~**The news are very shocking.**~~ **The news is very shocking.**

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XI-ISLAMIAT SUPPLY PREPARATION PAPER

تاریخ: _____ مدت: _____

سوال نمبر 2: احادیث کا ترجمہ و تشریح

1. حدیث: "لا یؤمن أحدکم حتی یحب لأخیہ ما یحب لنفسہ"

ترجمہ:

"تم میں سے کوئی شخص اس وقت تک مومن نہیں ہو سکتا جب تک کہ اپنے بھائی کے لیے وہی پسند نہ کرے جو اپنے لیے پسند کرتا ہے"

تشریح:

یہ حدیث اسلامی اخوت اور بھائی چارے کی بنیاد ہے۔ مسلمان کو دوسرے مسلمان بھائی کی خوشی اور بھلائی میں اپنی خوشی سمجھنی چاہیے۔

2. حدیث: "إنما الأعمال بالنیات، وإنما لکل امرئ ما نوی"

ترجمہ:

"اعمال کا دارومدار نیتوں پر ہے، اور ہر شخص کے لیے وہی ہے جس کی اس نے نیت کی"

تشریح:

ہر عمل کی قبولیت نیت پر منحصر ہے۔ نیک نیت سے کیا گیا چھوٹا عمل بھی بڑا ثواب رکھتا ہے۔

---

3. حدیث: "بعثت لأتمم مکارم الأخلاق"

ترجمہ:

"میں مکارم اخلاق کی تکمیل کے لیے بھیجا گیا ہوں"

تشریح:

رسول اللہ ﷺ کی بعثت کا اہم مقصد انسانوں کے اخلاق کو سنوارنا اور انہیں اعلیٰ اخلاقی معیار پر پہنچانا تھا۔

---

4. حدیث: "من یرد اللہ بہ خیرا یفقہہ فی الدین"

ترجمہ:

"جس کے ساتھ اللہ بھلائی کا ارادہ کرتا ہے، اسے دین کی سمجھ عطا کرتا ہے"

تشریح:

دین کی سمجھ اور فقہ اللہ کی خاص نعمت ہے جو اسے اپنے خاص بندوں کو عطا کرتا ہے۔

سوال نمبر 3: مختصر جوابات

---

i. جناب موسیٰ علیہ السلام کے معجزات

- عصا کا اژدہا بن جانا
- ید بیضا کا چمکنا
- دریائے نیل کا پھٹنا

---

ii. سورۃ البقرہ کا مختصر تعارف

- مدنی سورت، قرآن کی سب سے طویل سورت
- 286 آیات، 40 رکوع
- ایمان، احکام، اور دشمنان اسلام کے بارے میں

---

iii. تقویٰ کے فوائد و انعامات

- اللہ کی خاص رحمت
- مشکلات میں آسانی
- آخرت میں کامیابی

---

iv. حدیث اور مظلوم کی مدد

- مظلوم کی دعا قبول ہوتی ہے
- مظلوم کی مدد کرنا فرض ہے

---

v. اعمال کا دارومدار نیت پر

- نیت ہر عمل کی بنیاد
- نیک نیت سے چھوٹا عمل بھی بڑا

---

vi. زکوۃ کے فوائد و شرائط

- مال کی پاکیزگی
- معاشرے کے غریبوں کی مدد
- نصاب اور سال کا گزرنا

---

vii. قرآن مجید کے فضائل

- ہدایت اور رحمت
- شفاعت کرے گا
- پڑھنے والے کے لیے نور

---

viii. صحاح ستہ

- بخاری، مسلم، ترمذی
- نسائی، ابن ماجہ، ابو داؤد

---

ix. فرشتوں کے نام و ذمہ داریاں

- جبرائیل: وحی لانے والے
- میکائیل: رزق کے ذمہ دار
- عزرائیل: موت کے فرشتے

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XI-MATH SUPPLY PREPARATION PAPER

Date: _____ **Duration:** _____ **Total Marks:** _____

SECTION A

Q1. This is a placeholder for Question 1. Please provide the content for Q1.

Q2.

i. If $z_1 = 3 - 2i$ and $z_2 = 2 - 3i$, then verify the Triangle Inequality of complex numbers.

OR

If $x = 1 - 5i$, show that $x^2 - 2x + 26 = 0$.

ii. Find the values of unknowns x, y, z, given that the matrix

$A = \begin{bmatrix} 3 & x+2i & yi \\ 3-2i & 0 & 1+zi \\ -yi & 1-xi & -1 \end{bmatrix}$ is Hermitian.

OR

Prove the identity:

$\begin{bmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{bmatrix} \begin{bmatrix} 1 \\ \omega \\ \omega^2 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$.

iii. If a, b, c are different and

$\Delta = \begin{vmatrix} a & a^2 & 1+a^3 \\ b & b^2 & 1+b^3 \\ c & c^2 & 1+c^3 \end{vmatrix} = 0$, then show that $1+abc=0$.

OR

Find the rank of the matrix $\begin{bmatrix} 2 & 3 & 4 \\ 3 & 1 & 2 \\ -1 & 2 & 2 \end{bmatrix}$ using elementary row operations.

iv. Find the work done by the force $\vec{F} = 7\hat{i} + 9\hat{j} - 11\hat{k}$ in moving an object along a straight line from (4, 2, 7) to (6, 4, 9).

OR

Find the volume of the tetrahedron whose vertices are A(2, 1, 8), B(3, 2, 9), C(2, 1, 4), and D(3, 3, 10).

v. Find n so that $\frac{a^{n+5} + b^{n+5}}{a^{n+4} + b^{n+4}}$ may be the A.M. between a and b.

OR

Find the sum of the first 100 natural numbers which are neither exactly divisible by 3 nor by 7.

vi. Find the nth term of the geometric sequence if $\frac{a_6}{a_3} = \frac{4}{2}$ and \

$(a_2 = \frac{4}{9}\)$.

OR

Find the vulgar fraction equivalent to the recurring decimal 0.259.

vii. Find the sum of the series: $\frac{1}{1 \cdot 5} + \frac{1}{5 \cdot 9} + \frac{1}{9 \cdot 13} + \dots$ to n terms.

OR

Find $\sum_{k=1}^{n} \frac{1}{4k^2 - 1}$.

viii. How many words can be formed using all the letters of the word "MATHEMATICS"?

OR

Find the values of n and r, when $^nP_r = 210$ and $^nC_r = 35$.

ix. Prove by mathematical induction for every positive integer n:

$$1 \cdot 3 + 2 \cdot 4 + 3 \cdot 5 + \dots + n(n+2) = \frac{1}{6}n(n+1)(2n+7)$$.

OR

$1^3 + 2^3 + 3^3 + \dots + n^3 = \left[\frac{n(n+1)}{2}\right]^2$.

x. If $f(x) = x^3 - ax^2 + bx + 1$, find a and b, where $f(-1)=0$ and $f(2)=-3$.

OR

Let $f: \mathbb{R} \to \mathbb{R}$ be the function defined by $f(x) = \frac{x-1}{x-3}, x \neq 3$. Find the inverse of f and determine its domain and range.

xi. If $\cos\theta = -\frac{4}{5}$ and $\frac{\pi}{2} < \theta < \pi$, find $\sin(\theta/2)$ and $\cos(\theta/2)$.

OR

If $\sin\alpha = \frac{12}{13}$ and $\sin\beta = \frac{3}{5}$ where $0 < \alpha, \beta < \frac{\pi}{2}$, find $\sin(\alpha+\beta)$.

xii. Find the length of the third side of a triangular building that faces 13.6 meters along one street and 13 meters along another street, with the angle of intersection 72°.

OR

Two hikers start from the same point; one walks 9 km east, the other walks 10 km on a bearing of 55° north of east. How far apart are they at the end?

xiii. The measures of two sides of a triangle are 4 and 5 units. Find the third side so that the area of the triangle is 6 sq. units.

OR

Prove that: $r = 4R\sin(\alpha/2)\sin(\beta/2)\sin(\gamma/2)$.

xiv. Find the period of the function: $y = \sqrt{5}\cos\left(\frac{3x}{2}\right)$.

OR

Find the maximum and minimum values of the function: $y = 6 - \frac{1}{3}\sin(3\theta+2)$.

Q3.

Find the inverse of the matrix $\begin{bmatrix} 2 & 5 & -1 \\ 3 & 4 & 2 \\ 1 & 2 & -2 \end{bmatrix}$ using elementary row operations.

OR

Solve the system of linear equations by Gauss-Jordan elimination:

$$x - 2y - 2z = 2$$
$$-5x - 8y + 3z = -2$$
$$2x + 4y - z = 0$$

Q4.

Prove the Pentagon Law of Vector Addition.

OR

Points A, B, C have position vectors $\vec{a}, \vec{b}, \text{ and } 2\vec{a} - \vec{b}$ respectively. D divides AC in the ratio 2:3 and E divides BD in the ratio 4:1. Find the position vector of E.

5. A bag contains 40 balls: 5 green, 15 red, and the rest black. A ball is drawn at random. Find the probability that:

1. The ball is black.
2. The ball is green.
3. The ball is not green.

OR

A pair of fair dice is thrown. Given that the two numbers appearing are different, find the probability that:

1. The sum is 10.
2. The sum is six or less.

6. Use the Binomial Theorem to show that:

$$1 + \frac{1}{4} + \frac{1 \cdot 3}{4 \cdot 6} + \frac{1 \cdot 3 \cdot 5}{4 \cdot 6 \cdot 8} + \ldots = \frac{4}{3}$$

OR

If $y = \frac{1}{2} \cdot \frac{4}{9} + \frac{1 \cdot 3}{2^2 \cdot 2!} \cdot \left(\frac{4}{9}\right)^2 + \frac{1 \cdot 3 \cdot 5}{2^3 \cdot 3!} \cdot \left(\frac{4}{9}\right)^3 + \ldots$, then show that $5y^2 + 20y - 16 = 0$.

7. Find the point of intersection of the functions $f(x) = x + 2$ and $g(x) = x^2 - 4x + 6$ graphically.

OR

The paths of two airplanes A and B are determined by the lines $2x - y = 6$ and $3x + y = 4$. Graphically, find the point where the two paths cross.

8. Show that: $\sin 50° - \sin 70° + \sin 10° = 0$.

OR

Show that: $\sin 10° \cdot \sin 30° \cdot \sin 50° \cdot \sin 70° = \frac{1}{16}$.

9. Show that: $\arctan\left(\frac{3}{4}\right) + \arctan\left(\frac{3}{5}\right) - \arctan\left(\frac{8}{9}\right) = \frac{\pi}{4}$.

OR

Show that: $\arccos\left(\frac{2}{\sqrt{5}}\right) + \arctan\left(\frac{1}{3}\right) = \frac{\pi}{4}$.

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XI-PHYSICS SUPPLY PREPARATION PAPER

Exam: XI-Physics **Date:** _____ **Duration:** _____ **Marks:** _____

Q2. Attempt any TEN parts from the following:

(i)

Show that the equation $S = v_i t + \frac{1}{2}at^2$ is dimensionally correct.

OR

Define the angle of friction and the angle of repose. Explain the relation between them.

(ii)

State and explain the law of conservation of angular momentum.

OR

Define orbital speed. Derive the expression for the orbital speed of a satellite.

(iii)

Define a conservative field and show that the gravitational field is conservative.

OR

Define work. What are the conditions for maximum and minimum work? Establish the work-energy theorem.

(iv)

Define potential gradient. Show that the electric field intensity is equal to the negative of the potential gradient.

OR

Distinguish between Amplitude Modulation (AM) and Frequency Modulation (FM).

(v)

State Pascal's law and explain one of its applications.

OR

Define drag force and terminal velocity. Derive an expression for the terminal velocity of a spherical body falling through a viscous fluid.

(vi)

A helicopter is ascending vertically at 12 m/s. At a height of 80 m above the ground, a package is dropped. How long does the package take to reach the ground?

OR

A car starts from rest and moves with constant acceleration. During the 5th second of its motion, it covers 36 meters. Calculate:

i. **(a)** The acceleration of the car.

ii. **(b)** The total distance covered in 5 seconds.

(vii)

A 50 g bullet is fired into a 10 kg block suspended by a long cord. If the block swings and rises by 10 cm, what was the speed of the bullet?

OR

A helicopter weighs 3920 N. Calculate the force on it if it is ascending with an acceleration of 2 m/s^2. What will be the force if it is moving up with a constant speed of 4 m/s?

(viii)

A satellite orbits the Earth at a height of 100 km above the surface. Determine its speed, acceleration, and orbital period.

OR

What is the ideal banking angle for a gentle turn of 1.20 km radius on a highway with a 105 km/h speed limit?

(ix)

A 1 kilowatt motor pumps water from the ground to a height of 10 m. How many liters of water can it pump in one hour?

OR

A 120 kg bicyclist moving at 10 m/s applies a braking force of 500 N over a distance of 10 meters. What is the final velocity of the bicyclist?

(x)

Water is pumped at 0.50 m/s through a 4.0 cm diameter pipe in a basement under a pressure of 3.0 atm. What will be the flow speed and pressure in a 2.6 cm diameter pipe on the second floor 5.0 m above?

OR

A hot air balloon has a volume of 2200 m^3. The density of cold air (20°C) is 1.205 kg/m^3 and the density of the hot air inside (100°C) is 0.946 kg/m^3. What weight can the balloon lift?

(xi)

Calculate the viscous drag on an oil drop of 0.1 mm radius falling through air at terminal velocity (viscosity of air = 1.8×10^{-5} Pa·s, density of oil = 850 kg/m^3).

OR

How far apart must two protons be for the electrostatic force between them to equal the gravitational force on a proton at Earth's surface?

(xii)

Calculate the resistance of a 100-meter roll of 2.5 mm^2 copper wire (resistivity of copper = 1.72×10^{-8} Ω·m).

OR

A wire of length 12 m and cross-sectional area 4.0×10^{-7} m^2 has a resistance of 6.0 Ω. What is the resistivity of the material?

(xiii)

In a cricket match, a spectator is 60.0 m from the batsman. How long does the sound of the bat hitting the ball take to reach the spectator if the air temperature is 27°C?

OR

A train whistle is measured at 219 Hz as the train approaches and 184 Hz as it leaves. The speed of sound is 340 m/s. Find the speed of the train and the actual frequency of the whistle.

(xiv)

Monochromatic light of wavelength 6900 Å is used in a double-slit experiment. The screen is 3.30 m away, and the distance between adjacent bright fringes is 1.80 cm. What is the distance between the slits?

OR

A beam of X-rays (λ = 0.071 nm) is diffracted by a rock salt crystal with atomic planes 1.98 Å apart. Find the glancing angle for the second-order diffraction.

Q3. Attempt any TWO parts from the following:

(i) (a)

Describe the addition of vectors by the rectangular component method.

OR

A projectile is fired with initial velocity "v_0" at an angle "θ" with the horizontal. Derive expressions for its:

i. Maximum Height (H)

ii. Horizontal Range (R)

iii. Total Time of Flight (T)

(ii) (b)

State and prove Bernoulli's equation for steady fluid flow.

OR

Differentiate between streamline and turbulent flow. State and derive the equation of continuity.

Q4. Attempt any TWO parts from the following:

(i) (a)

Define Electric Flux. Calculate the electric flux through a closed surface and through a sphere. Also, state and explain Gauss's Law.

OR

Derive the expression for the capacitance of a parallel-plate capacitor when the medium between the plates is:

i. Air

ii. A dielectric medium

(ii) (b)

A particle is moving in a circular path with constant angular velocity. Show that the motion of its projection along a diameter is simple harmonic motion (SHM).

OR

Define an elastic collision. Derive the expressions for the final velocities of two bodies after a one-dimensional elastic collision.

Q5. Attempt any TWO parts from the following:

(i) (a)

What is the Doppler Effect? Derive the equation for the apparent frequency heard by a listener when:

i. The listener moves towards a stationary source.

ii. The source moves towards a stationary listener.

OR

Describe Newton's formula for the speed of sound and its defects. How did Laplace correct it?

(ii) (b)

What are Newton's Rings? Derive the expression for the diameter of the nth dark ring.

OR

Describe Young's double-slit experiment for the interference of light and derive the equation for fringe spacing.

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XI-اردو سپلائی پریپریشن پیپر

تاریخ: _____ دورانیہ: _____ کل نمبر: _____

حصہ الف: مختصر جوابات

سوال نمبر 1: درج ذیل میں سے کسی دس (10) کے مختصر جوابات تحریر کریں۔

1. مسلمانوں کے زوال کا سب سے بڑا سبب کیا ہے؟ (علامہ اقبال)
2. "خواہ مخواہ" کے افسانے کی مرکزی شخصیت اور اس کا ماحول کیا اثر ڈالتا ہے؟
3. جندیرکھڈ کے تیغر صاحب کا کردار کس طرح واضح ہوا؟
4. حالی نے زبان کی طاقت کو کس طرح قدرت سے تعبیر کیا؟
5. "کار جہاں بازیا" کے سلے میں جلے واقعے کا ذکر کریں۔
6. راشد الخیری اور پریم چند کے افسانوں میں کیا فرق ہے؟
7. اردو زبان کی ترقی میں بیسویں صدی کے ادبا کا کیا حصہ رہا؟
8. مصاحب نے مرزا صاحب کو کیا مشورہ دیا تھا؟
9. "میں بلی ہوں" کہانی کا مرکزی خیال کیا ہے؟
10. خطوطِ غالب میں سلطان شاہجہاں بیگم کے لیے غالب کے کیا مراد تھے؟

حصہ ب: درمیانی جوابات

سوال نمبر 2: درج ذیل اشعار میں سے کسی ایک کی تشریح شاعر کے حوالے سے مختصر تعارف کے ساتھ کیجیے۔

a- (الف)

طبل وعلم بے یاس ہے، نہ لک ومال

قیدِ حیات وندھم، اصل بے ووتل ایک بیر

(شاعر: علامہ اقبال)

a- (ب)

ابات وکختی این کرقد میرا

بم ی خلاق موسی کرے کازمانہ کیا؟

(شاعر: میر تقی میر)

a- (ج)

موتی بلی آدی، عم سی مجات بیک کیول

نحت ناومی مجلی وام بین لانی والا

(شاعر: خواجہ میر درد)

a- (د)

وحدت بے تیری حرف وولی کانہ آسکی

معلوم سب ی لوحقی بو یہر بھی مدعا

(شاعر: غالب)

سوال نمبر 3: درج ذیل اقتباس میں سے کسی ایک کی تشریح کیجیے۔

a- (الف)

"حلا مجی اس بات کو یینی ثابت افسوس ہے کہ بم سب آیس بس بھالی توبی ککر مثل براوراک یوسف کی بیل آیس کی وسق اور محبت، یک ولی اوریك جیتی بیٹ کم ببر - حسد بخض و عداوت کابرجکه اثریاباجاتاب ج کانتیجر آیس ک تاتفاقب۔"

a- (ب)

"کوو کارو تجهرك وہ جوآخری جثان کی بلندی نظر سے تقی جبال اکیة مهریرا یهز یهزاتاي،وبال تکتوبین الاقوای شبرت یا فتة کولی راك کا کبری ہے سکتاب۔"

سوال نمبر 4: درج ذیل جزو کی تشریح کیجیے۔

(الف)

درج ذیل نظم کے شاعر اور نظم کا نام تحریر کیجیے۔

(ب)

اس کا مرکزی خیال تحریر کیجیے۔

تفکر و دانش کی معراج، خدا کا اقرار

بے وجدان کی آوازی، فطرت کی تکرار

اے خالق نی جبر و قوت وانقی وے

یحول یتول کوعطاج فی سمی تقش وزکار.

(نظم: "فکر و دانش" - شاعر: سر سید احمد خان)

حصہ ج: تفصیلی جوابات

سوال نمبر 5: درج ذیل میں سے کسی ایک سبق کا خلاصہ تحریر کیجیے۔

"فاقے اور روزے" (پطرس بخاری)

"زیور کابینہ" (رشید احمد صدیقی)

"یاکم کی بلی" (عبدالحق)

a- (الف)

منتخب سبق کے مصنف کا مختصر تعارف تحریر کیجیے۔

a- (ب)

منتخب سبق کا خلاصہ تحریر کیجیے۔

سوال نمبر 6: درج ذیل میں سے کسی ایک شاعر کے کلام کی خصوصیات تحریر کیجیے۔

مرزا اسد اللہ خان غالب

خواجہ میر درد

ظفر علی خان

سوال نمبر 7: درج ذیل میں سے کسی ایک موضوع پر مضمون تحریر کیجیے۔

حب الوطنی اور ہمارا کردار

ایک مسلم معاشرے میں برداشت کی روایت

زندگی میں نظم و ضبط کی اہمیت

ماحولیاتی آلودگی اور موسمیاتی تبدیلی کے اثرات

سماجی ذمہ داری اور قومی یکجہتی

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XI-ZOOLOGY SUPPLY PREPARATION PAPER

Date: _____ **Duration:** _____ **Total Marks:** _____

SECTION A

Q2 (a) REASONING QUESTIONS (Attempt any 5. Each question carries equal marks)

i. Why are water molecules called amphoteric in nature?

OR

Why is antipyretic therapy used?

ii. Why is the SA node called the pacemaker of the heart?

OR

Why are monosaccharides sweet whereas polysaccharides are not?

iii. Why does blood flow faster in arteries?

OR

How does substrate concentration affect the activity of enzymes?

iv. How are echinoderms related to chordates?

OR

Why is the left ventricle the thickest chamber of the heart?

v. Why is air a better respiratory medium than water?

OR

Why do capillaries have a single layer of endothelium?

vi. Why is blood pressure high in arteries and low in veins?

OR

Why is sucrose the most suitable transport material in plants?

vii. How does the stomach protect itself against HCl?

OR

Why do fats provide more energy than carbohydrates?

viii. Why is ice less dense than water (why does it float)?

OR

Why are Helper T-cells so called?

Q2 (b) NON-REASONING QUESTIONS (Attempt any 5. Each question carries equal marks)

i. Differentiate between Inhalation & Exhalation.

OR

Define competitive and non-competitive inhibition.

ii. Draw the structure of starch and write down the result of its iodine test.

OR

Discuss the role of vasodilation and vasoconstriction.

iii. Distinguish between saturated & unsaturated acylglycerols.

OR

Describe the fundamental characteristics of chordates.

iv. State the 'lock and key' model of enzyme action. Give any two characteristics of enzymes.

OR

Write a note on the function of the lymphatic system.

v. Differentiate between RNA & DNA.

OR

Mention the role of respiratory pigments.

vi. Give the name and structure of different types of cells found in sponges.

OR

Write a note on phagocytosis.

vii. Write down the economic importance of Cnidaria.

OR

Differentiate between cartilaginous and bony fish.

viii. Write down any two biological importance of water.

OR

State the types of structural proteins with examples.

Q3 What are biological molecules? Explain the composition, types, structure, and function of any one of the following:

Carbohydrates

Proteins

Lipids

OR

Explain the role of phagocytosis and cytotoxicity in the second line of defense. Differentiate between NK cells and TC cells.

Q4 Write down the general characteristics, evolutionary adaptations, and economic importance of any one of the following phyla:

Phylum Arthropoda

Phylum Annelida

Phylum Mollusca

OR

Give the general characteristics of class Mammalia or class Aves and their orders with examples.

Q5 What is a nucleotide? How do nucleotides form DNA? Draw the structure of a DNA molecule and discuss the process of gene expression.

OR

Define immunity. Describe in detail the Adaptive immune system in humans.

Q6 With the help of a labelled diagram, describe in detail the main structural and functional components of the human respiratory system.

OR

Describe the structure of the human heart with the help of a labelled diagram.