GAT B Chemistry

Sample Paper – 1

Duration: 23 Minutes **Maximum Marks: 15**

Instructions

- This paper contains **15** Multiple Choice Questions (Single Correct Answer), modelled on the Chemistry portion of **GAT B** entrance.
- Each correct answer carries **+1 marks**. There is **a deduction of 0.5 marks for each incorrect answer** for incorrect or unattempted answers.
- Only **one** option is correct. Choose carefully.
- Syllabus level: **NCERT Class 11 & 12 Chemistry — Physical, Organic, and Inorganic Chemistry.**
- Use of mobile phones, calculators, or electronic gadgets is strictly prohibited.

Q1. The isoelectric point (pI) of glycine is the pH at which it has no net charge and exists as a zwitterion. Given $pK_{a1} = 2.34$ (carboxyl) and $pK_{a2} = 9.60$ (amino), the pI of glycine is:

$$^{\oplus}H_3N{-}CH_2{-}COO^{\ominus}$$

Glycine zwitterion at pH = pI ≈ 5.97

(A) 2.34

(B) 5.97

(C) 9.60

(D) 7.00

Q2. In the Watson-Crick model of DNA, the correct hydrogen-bond count between base pairs is:

(A) Adenine–Thymine: 3 hydrogen bonds; Guanine–Cytosine: 2 hydrogen bonds

(B) Adenine–Thymine: 2 hydrogen bonds; Guanine–Cytosine: 2 hydrogen bonds

(C) Adenine–Thymine: 3 hydrogen bonds; Guanine–Cytosine: 3 hydrogen bonds

(D) Adenine–Thymine: 2 hydrogen bonds; Guanine–Cytosine: 3 hydrogen bonds

Q3. Enzymes that catalyze the transfer of a functional group (such as an amino or phosphate group) from one molecule to another are classified as:

(A) Transferases

(B) Oxidoreductases

(C) Lyases

(D) Isomerases

Q4. A buffer is prepared by mixing 0.10 M acetic acid ($pK_a = 4.74$) with 0.20 M sodium acetate. The approximate pH of this buffer is:

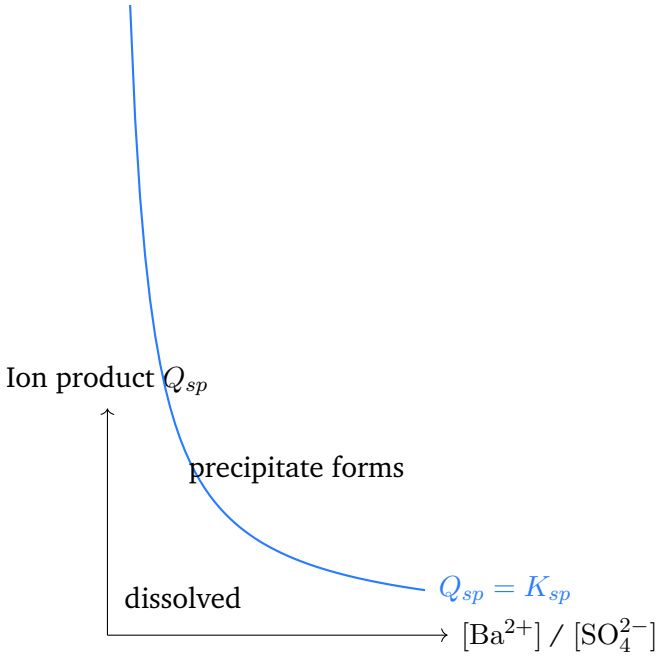
(A) 4.44

(B) 4.74

(C) 5.04

(D) 5.34

Q5. The solubility product of $BaSO_4$ is $K_{sp} = 1.08 \times 10^{-10}$ at 25 °C. Its molar solubility in pure water is closest to:



(A) 1.08×10^{-5} M

(B) 1.04×10^{-5} M

(C) 2.16×10^{-5} M

(D) 5.40×10^{-11} M

Q6. For a reaction with $\Delta H = -50\,\text{kJ mol}^{-1}$ and $\Delta S = -100\,\text{J mol}^{-1}\,\text{K}^{-1}$, the reaction is spontaneous ($\Delta G < 0$) at:

(A) Temperatures below 500 K

(B) Temperatures above 500 K

(C) All temperatures

(D) No temperature (always non-spontaneous)

Q7. Given the following standard enthalpies: (i) $\text{C(s)} + \text{O}_2\text{(g)} \rightarrow \text{CO}_2\text{(g)}$, $\Delta H = -393\,\text{kJ mol}^{-1}$; and (ii) $\text{CO(g)} + \frac{1}{2}\text{O}_2\text{(g)} \rightarrow \text{CO}_2\text{(g)}$, $\Delta H = -283\,\text{kJ mol}^{-1}$. The standard enthalpy of formation of CO(g) from C(s) and $\frac{1}{2}\text{O}_2$(g) is:

(A) $+676\,\text{kJ mol}^{-1}$

(B) $-676\,\text{kJ mol}^{-1}$

(C) $-110\,\text{kJ mol}^{-1}$

(D) $+110\,\text{kJ mol}^{-1}$

Q8. In the complex ion $[\text{Fe}(\text{CN})_6]^{3-}$, the oxidation state of iron and the charge on each cyanide ligand are respectively:

(A) $+2,\ -1$

(B) $+2,\ -2$

(C) $+3,\ -2$

(D) $+3,\ -1$

Q9. In crystal field theory, the magnitude of the octahedral splitting energy Δ_o is GREATEST when the metal ion is surrounded by:

(A) Weak-field ligands such as Cl^- and F^-

(B) Strong-field ligands such as CN^- and CO

(C) Intermediate-field ligands such as H_2O and NH_3

(D) Ambidentate ligands such as NO_2^-

Q10. Among the following alkyl bromides, which undergoes SN2 reaction most readily?

(A) CH_3CH_2Br (primary; least steric hindrance)

(B) $(CH_3)_2CHBr$ (secondary)

(C) $(CH_3)_3CBr$ (tertiary; strongly favours SN1)

(D) $(CH_3)_3CCH_2Br$ (neopentyl; highly hindered primary)

Q11. In electrophilic aromatic substitution, which of the following substituents directs the incoming electrophile to the ortho/para position but simultaneously DEACTIVATES the benzene ring?

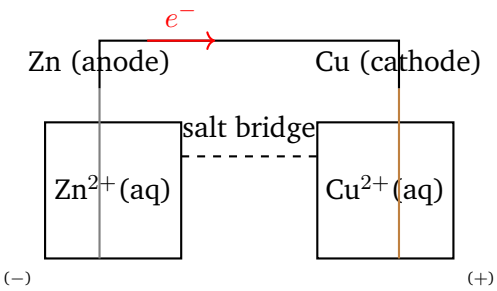
(A) $-\text{NH}_2$

(B) $-\text{OH}$

(C) $-\text{Cl}$

(D) $-CH_3$

Q12. For the cell reaction $Zn(s) + Cu^{2+}(aq) \rightarrow Zn^{2+}(aq) + Cu(s)$, $E^\circ_{cell} = +1.10\,V$ at 25 °C. If the concentration of Cu^{2+} is increased (keeping $[Zn^{2+}]$ constant), the cell potential:



(A) Decreases

(B) Increases

(C) Remains unchanged

(D) Becomes negative

Q13. A first-order reaction has rate constant $k = 0.693\,min^{-1}$. The fraction of reactant remaining after 2 minutes is:

(A) $\frac{1}{2}$

(B) $\frac{1}{3}$

(C) $\frac{1}{6}$

(D) $\frac{1}{4}$

Q14. Which of the following statements about transition metals is INCORRECT?

(A) All transition metals exhibit a maximum oxidation state of $+7$

(B) Transition metals generally form coloured compounds due to d–d electronic transitions

(C) Transition metals exhibit variable oxidation states due to comparable energies of $(n-1)d$ and ns orbitals

(D) Transition metals often act as catalysts due to their ability to change oxidation states reversibly

Q15. Natural rubber is a polymer of the monomer isoprene (2-methylbuta-1,3-diene). The type of polymerization that produces natural rubber is:

(A) Condensation polymerization (water is released as by-product)

(B) Step-growth polymerization

(C) Addition polymerization (chain-growth; no by-product formed)

(D) Ring-opening polymerization

Detailed Solutions

Q1.

Solution

Concept — Isoelectric Point (pI) of Amino Acids: The isoelectric point is the pH at which an amino acid bears no net charge and exists predominantly as the zwitterion. For amino acids with one α-amino and one α-carboxyl group, pI is the arithmetic mean of the two pK_a values that flank the zwitterionic form.

Step 1 — Identify the relevant pK_a values: Glycine has $pK_{a1} = 2.34$ (carboxyl group, $-COOH$) and $pK_{a2} = 9.60$ (amino group, $-NH_3^+$). The zwitterion exists between these two values.

Step 2 — Apply the pI formula:

$$pI = \frac{pK_{a1} + pK_{a2}}{2} = \frac{2.34 + 9.60}{2} = \frac{11.94}{2} = 5.97$$

Why other options are wrong:

- Option A (2.34): This is pK_{a1} of the carboxyl group, not the pI.
- Option B: This is the correct answer ($pI = 5.97$).
- Option C (9.60): This is pK_{a2} of the amino group, not the pI.
- Option D (7.00): This is neutral pH; the pI of glycine does not equal 7.00 because the two pK_a values are not symmetric around 7.

Final Answer: $pI = (2.34 + 9.60)/2 = 5.97 \Rightarrow \boxed{B}$

Answer: (B) Go Back to Q 1

Q2.

Solution

Concept — Watson-Crick Base Pairing in DNA: In the double helix, adenine (A) pairs with thymine (T) via two hydrogen bonds, while guanine (G) pairs with cytosine (C) via three hydrogen bonds. The extra hydrogen bond in G–C pairing makes GC-rich DNA thermally more stable.

Step 1 — Recall A–T pairing: Adenine (2 ring nitrogens, 1 amino) and thymine (2 carbonyl oxygens, 1 N–H) form **2 hydrogen bonds** (N–H$\cdots$O and N$\cdots$H–N).

Step 2 — Recall G–C pairing: Guanine and cytosine share **3 hydrogen bonds** (two N–H$\cdots$O and one N$\cdots$H–N), accounting for their higher melting tempera-

ture.

Why other options are wrong:

- Option A: Reverses the count (A–T cannot form 3 bonds; G–C cannot form only 2).
- Option B: Under-counts G–C (only 2 bonds stated instead of 3).
- Option C: Over-counts A–T (3 bonds stated instead of 2).
- Option D: This is the correct answer.

Final Answer: A–T: 2 H-bonds; G–C: 3 H-bonds $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q 2

Q3.

Solution

Concept — IUB/IUBMB Enzyme Classification: Enzymes are grouped into six main classes by the reaction they catalyze: (1) Oxidoreductases, (2) Transferases, (3) Hydrolases, (4) Lyases, (5) Isomerases, (6) Ligases. Transferases move a functional group (amino, phosphate, methyl, etc.) from donor to acceptor substrate.

Step 1 — Identify the key criterion: The question specifies *transfer of a functional group from one molecule to another* — this is the defining feature of Transferases (EC class 2).

Why other options are wrong:

- Option A: This is the correct answer (Transferases).
- Option B (Oxidoreductases): Catalyze oxidation-reduction reactions involving electron transfer.
- Option C (Lyases): Catalyze addition or removal of groups to/from double bonds, or cleavage of C–C, C–O, or C–N bonds (other than hydrolysis/oxidation).
- Option D (Isomerases): Catalyze intramolecular rearrangements (isomerizations).

Final Answer: Transferases $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q 3

Q4.

Solution

Concept — Henderson-Hasselbalch Equation: For a weak acid-conjugate base buffer:

$$\text{pH} = \text{pK}_a + \log\left(\frac{[\text{conjugate base}]}{[\text{weak acid}]}\right)$$

Step 1 — Identify components: Weak acid = acetic acid (0.10 M); conjugate base = sodium acetate (0.20 M); $\text{pK}_a = 4.74$.

Step 2 — Substitute into equation:

$$\text{pH} = 4.74 + \log\left(\frac{0.20}{0.10}\right) = 4.74 + \log(2.0) = 4.74 + 0.301 \approx 5.04$$

Why other options are wrong:

- Option A (4.44): Would result from $\log(0.5) = -0.30$, i.e., if acid $>$ salt (reversed ratio).
- Option B (4.74): The pH when acid and salt concentrations are equal (ratio $= 1$, $\log 1 = 0$).
- Option C: This is the correct answer.
- Option D (5.34): Would require $\log(4) \approx 0.60$, i.e., a 4:1 salt-to-acid ratio.

Final Answer: $\text{pH} = 4.74 + 0.30 = 5.04 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q 4

Q5.

Solution

Concept — Molar Solubility from K_{sp}: For a 1:1 electrolyte $\text{MX} \rightleftharpoons \text{M}^{n+} + \text{X}^{n-}$, if s is the molar solubility, then $K_{sp} = s \times s = s^2$, so $s = \sqrt{K_{sp}}$.

Step 1 — Set up the equilibrium:

$$\text{BaSO}_4(\text{s}) \rightleftharpoons \text{Ba}^{2+}(\text{aq}) + \text{SO}_4^{2-}(\text{aq}), \quad K_{sp} = [\text{Ba}^{2+}][\text{SO}_4^{2-}] = s^2$$

Step 2 — Solve for s:

$$s = \sqrt{K_{sp}} = \sqrt{1.08 \times 10^{-10}} = \sqrt{1.08} \times 10^{-5} \approx 1.039 \times 10^{-5}\,\text{M}$$

This rounds to 1.04×10^{-5} M.

Why other options are wrong:

- Option A (1.08×10^{-5} M): Uses K_{sp} directly as s instead of taking the square root of K_{sp}.
- Option B: This is the correct answer.
- Option C (2.16×10^{-5} M): Doubles the answer incorrectly (confuses s with $2s$).
- Option D (5.40×10^{-11} M): Divides K_{sp} by 2 instead of taking the square root.

Final Answer: $s = \sqrt{1.08 \times 10^{-10}} \approx 1.04 \times 10^{-5}\,\text{M} \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q 5

Q6.

Solution

Concept — Gibbs Free Energy and Spontaneity: A reaction is spontaneous when $\Delta G = \Delta H - T\Delta S < 0$. The sign combination of ΔH and ΔS determines the temperature dependence of spontaneity.

Step 1 — Analyze sign combination: Here $\Delta H < 0$ (exothermic) and $\Delta S < 0$ (entropy decreases). Both ΔH and $-T\Delta S$ contribute opposing effects:

$$\Delta G = \underbrace{-50{,}000}_{\text{J mol}^{-1}} - T \times \underbrace{(-100)}_{\text{J mol}^{-1}\text{K}^{-1}} = -50{,}000 + 100T$$

Step 2 — Find the crossover temperature:

$$\Delta G < 0 \implies -50{,}000 + 100T < 0 \implies T < 500\,\text{K}$$

Why other options are wrong:

- Option A: This is the correct answer (spontaneous below 500 K).
- Option B ($T > 500\,K$): Above 500 K, $\Delta G > 0$; reaction becomes non-spontaneous.
- Option C (all temperatures): Only valid when $\Delta H < 0$ and $\Delta S > 0$ simultaneously.
- Option D (no temperature): Would be correct if $\Delta H > 0$ and $\Delta S < 0$; not applicable here.

Final Answer: Spontaneous for $T < 500\,\text{K} \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q 6

Q7.

Solution

Concept — Hess's Law: The standard enthalpy change of a reaction is independent of the pathway. Target equations can be manipulated (reversed, scaled) and combined algebraically.

Step 1 — Write the target reaction:

$$\mathrm{C(s)} + \tfrac{1}{2}\,\mathrm{O_2(g)} \rightarrow \mathrm{CO(g)}, \quad \Delta H_f^\circ = ?$$

Step 2 — Combine the given equations:

(i) $\mathrm{C(s)} + \mathrm{O_2(g)} \rightarrow \mathrm{CO_2(g)}, \quad \Delta H_1 = -393\,\mathrm{kJ\,mol^{-1}}$

(ii) reversed: $\mathrm{CO_2(g)} \rightarrow \mathrm{CO(g)} + \tfrac{1}{2}\mathrm{O_2(g)}, \quad \Delta H = +283\,\mathrm{kJ\,mol^{-1}}$

Adding: $\Delta H_f^\circ(\mathrm{CO}) = -393 + 283 = -110\,\mathrm{kJ\,mol^{-1}}$.

Why other options are wrong:

- Option A ($+676$): Sum of magnitudes with wrong sign.
- Option B (-676): Sum of both enthalpies instead of difference.
- Option C: This is the correct answer.
- Option D ($+110$): Correct magnitude but wrong sign (reaction is exothermic).

Final Answer: $\Delta H_f^\circ(\mathrm{CO}) = -110\,\mathrm{kJ\,mol^{-1}} \Rightarrow \boxed{\mathrm{C}}$

Answer: (C) Go Back to Q 7

Q8.

Solution

Concept — Oxidation State in Coordination Compounds: The overall charge on a complex ion equals the sum of the metal oxidation state and the charges of all ligands. Cyanide ($\mathrm{CN^-}$) is a monoanionic ligand with charge -1.

Step 1 — Set up the charge balance: In $[\mathrm{Fe(CN)_6}]^{3-}$, let the oxidation state of Fe be x:

$$x + 6 \times (-1) = -3 \implies x - 6 = -3 \implies x = +3$$

Step 2 — Confirm CN^- charge: Cyanide carries a single negative charge (-1) in all its complexes; it is never -2.

Why other options are wrong:

- Option A ($+2$, -1): Fe^{2+} with six CN^- would give $2 - 6 = -4$, not -3.
- Option B ($+2$, -2): CN^- is never dianonic; also gives $+2 - 12 = -10 \neq -3$.
- Option C ($+3$, -2): CN carries -1, not -2.
- Option D: This is the correct answer.

Final Answer: Fe is $+3$; each CN^- carries $-1 \Rightarrow$ D

Answer: (D) Go Back to Q 8

Q9.

Solution

Concept — Spectrochemical Series and Crystal Field Splitting: In crystal field theory (CFT), ligands are arranged in the spectrochemical series by their ability to split the d-orbitals. Strong-field ligands cause a larger Δ_o; weak-field ligands cause a smaller Δ_o. The ordering is approximately:

$$I^- < Br^- < Cl^- < F^- < OH^- < H_2O < NH_3 < en < NO_2^- < CN^- \approx CO$$

Step 1 — Identify the strongest-field ligands: CO and CN^- are at the high end of the spectrochemical series (strong σ-donors and π-acceptors), producing the greatest Δ_o.

Why other options are wrong:

- Option A (Cl^-, F^-): These are weak-field ligands producing smaller Δ_o.
- Option B: This is the correct answer.
- Option C (H_2O, NH_3): Intermediate-field ligands; Δ_o is moderate.
- Option D (NO_2^-): NO_2^- is moderately strong when N-bound but still weaker than CN^- or CO.

Final Answer: Δ_o is greatest with CN^- and CO $\Rightarrow$ B

Answer: (B) Go Back to Q 9

Q10.

Solution

Concept — SN2 Reaction and Steric Effects: The SN2 (bimolecular nucleophilic substitution) mechanism proceeds through a backside-attack transition state. Steric hindrance at the carbon bearing the leaving group is the dominant factor: methyl $>$ primary $>$ secondary $\gg$ tertiary in SN2 reactivity.

Step 1 — Classify each substrate:

- CH_3CH_2Br: primary (one alkyl substituent on α-carbon) — **least hindered among the primary options**
- $(CH_3)_2CHBr$: secondary (two alkyl groups) — more hindered
- $(CH_3)_3CBr$: tertiary (three alkyl groups) — highly hindered; strongly favours SN1
- $(CH_3)_3CCH_2Br$: neopentyl (primary but with bulky neo-pentyl group in β-position) — severely hindered despite being formally primary

Step 2 — Rank SN2 reactivity: CH_3CH_2Br is the least hindered substrate and undergoes SN2 most readily.

Why other options are wrong:

- Option A: This is the correct answer.
- Option B: Secondary carbon introduces more steric bulk, slowing SN2.
- Option C: Tertiary carbon essentially cannot undergo SN2; favours SN1.
- Option D: Although formally primary, the β-neo-pentyl group creates severe steric hindrance at the transition state.

Final Answer: CH_3CH_2Br (primary, least hindered) $\Rightarrow \boxed{A}$

Answer: (A) Go Back to Q 10

Q11.

Solution

Concept — EAS Directing and Activating/Deactivating Effects: Substituents on benzene are classified as: (i) activating ortho/para directors (donate electrons by resonance: $-NH_2$, $-OH$, $-OR$, $-R$), (ii) deactivating ortho/para directors (halogens: $-F$, $-Cl$, $-Br$, $-I$; inductive withdrawal $>$ resonance donation), or (iii) deactivating meta directors (electron-withdrawing by resonance: $-NO_2$, $-CN$, $-COR$).

Step 1 — Identify the unique category: Halogens are the only common substituents that are *ortho/para directors but ring deactivators*. Their $-I$ effect (electron withdrawal by induction) dominates over their $+M$ effect (electron donation by resonance), resulting in a deactivated ring despite ortho/para selectivity.

Step 2 — Evaluate each option:

- $-NH_2$: strong activator and ortho/para director (Option A is wrong).
- $-OH$: activator and ortho/para director (Option B is wrong).
- $-Cl$: **deactivator but ortho/para director** — matches the question exactly.
- $-CH_3$: activator and ortho/para director (Option D is wrong).

Final Answer: $-Cl$ is the ortho/para director that deactivates the ring $\Rightarrow$ C

Answer: (C) Go Back to Q 11

Q12.

Solution

Concept — Nernst Equation and Cell Potential: The Nernst equation at 25 °C is:

$$E_{\text{cell}} = E^\circ_{\text{cell}} - \frac{0.0592}{n} \log Q$$

where Q is the reaction quotient. Increasing the concentration of a reactant (Cu^{2+}) decreases Q, which increases the cell potential.

Step 1 — Write the reaction quotient: For $Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$ ($n = 2$):

$$Q = \frac{[Zn^{2+}]}{[Cu^{2+}]}$$

Step 2 — Analyze the effect of increasing $[Cu^{2+}]$: Increasing $[Cu^{2+}]$ decreases Q; therefore $\log Q$ decreases, making $-\frac{0.0592}{n} \log Q$ more positive, so E_{cell} increases.

Why other options are wrong:

- Option A (Decreases): Wrong direction — decreasing a reactant would decrease E.
- Option B: This is the correct answer.
- Option C (Unchanged): Only valid at standard conditions or when $Q = 1$.
- Option D (Becomes negative): $E^\circ_{\text{cell}} = +1.10\,\text{V}$; increasing [reactant] moves E further from negative values.

Final Answer: Increasing $[Cu^{2+}]$ decreases $Q \Rightarrow E_{\text{cell}}$ increases $\Rightarrow$ B

Answer: (B) Go Back to Q 12

Q13.

Solution

Concept — First-Order Kinetics and Half-Life: For a first-order reaction, the half-life is $t_{1/2} = \ln 2/k = 0.693/k$, and the fraction remaining after n half-lives is $(1/2)^n$.

Step 1 — Calculate the half-life:

$$t_{1/2} = \frac{0.693}{k} = \frac{0.693}{0.693\,\text{min}^{-1}} = 1\,\text{min}$$

Step 2 — Determine the number of half-lives elapsed: In $t = 2\,\text{min}$:

$$n = \frac{t}{t_{1/2}} = \frac{2\,\text{min}}{1\,\text{min}} = 2 \text{ half-lives}$$

Step 3 — Calculate the remaining fraction:

$$\left(\frac{1}{2}\right)^2 = \frac{1}{4}$$

Why other options are wrong:

- Option A $(1/2)$: Corresponds to only 1 half-life (1 min), not 2 min.
- Option B $(1/3)$: Not a power-of-two fraction; does not arise from integer half-lives.
- Option C $(1/6)$: Incorrect; no standard half-life calculation gives this result here.
- Option D: This is the correct answer.

Final Answer: After 2 half-lives, fraction remaining $= (1/2)^2 = 1/4 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q 13

Q14.

Solution

Concept — Variable Oxidation States of Transition Metals: Transition metals exhibit a wide range of oxidation states. The maximum oxidation state is NOT uniformly $+7$ for all transition metals — some achieve even higher states (e.g., Os and Ru reach $+8$ in OsO_4 and RuO_4), while others have lower maxima (e.g., Cu reaches only $+2$ commonly, $+3$ rarely).

Step 1 — Evaluate Statement A: The claim that *all* transition metals exhibit a maximum oxidation state of $+7$ is **incorrect**. Osmium (Os) and ruthenium (Ru) can be oxidized to $+8$. Conversely, copper's highest stable oxidation state is $+2$ (or $+3$ in some compounds), never approaching $+7$.

Why other options (B, C, D) are correct statements:

- Option B: Coloured transition metal compounds arise from d–d transitions — TRUE.
- Option C: Variable oxidation states result from comparable $(n-1)d$ and ns energies — TRUE.
- Option D: Ability to change oxidation state reversibly makes them efficient catalysts — TRUE.

Final Answer: Statement A is incorrect (e.g., Os reaches $+8$) $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q 14

Q15.

Solution

Concept — Types of Polymerization: There are two broad types: (1) **Addition (chain-growth) polymerization** — monomers add sequentially to a growing chain without loss of any small molecule; (2) **Condensation (step-growth) polymerization** — monomers react to expel a small molecule (often H_2O) at each step. A third type, ring-opening polymerization, opens cyclic monomers.

Step 1 — Identify the monomer: Isoprene ($CH_2{=}C(CH_3){-}CH{=}CH_2$, 2-methylbuta-1,3-diene) is a diene monomer.

Step 2 — Identify the polymerization type: Isoprene undergoes **1,4-addition polymerization** (chain-growth). Each monomer adds across the diene system; no by-product is released. Natural rubber is *cis*-1,4-polyisoprene.

Why other options are wrong:

- Option A (Condensation): Condensation requires bi-functional monomers and releases a small molecule (e.g., H_2O); isoprene does neither.
- Option B (Step-growth): Step-growth is another name for condensation polymerization; same reasoning applies.
- Option C: This is the correct answer.
- Option D (Ring-opening): Requires a cyclic monomer; isoprene is not cyclic.

Final Answer: Addition (chain-growth) polymerization; no by-product formed $\Rightarrow$ C

Answer: (C) Go Back to Q 15

Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	B	2	D	3	A	4	C	5	B
6	A	7	C	8	D	9	B	10	A
11	C	12	B	13	D	14	A	15	C