NEST Chemistry Sample Paper – 7

Duration: 45 Minutes **Maximum Marks: 60**

Instructions

- This paper contains **20 Multiple Choice Questions (single correct answer)**, modelled on the Chemistry section of **NEST 2026**.
- Each correct answer carries **+3 marks**. There is a deduction of -1 **mark** for each incorrect answer; **no marks** are deducted for an unattempted question.
- Every question has exactly **four options**, of which only **one** is correct. Choose carefully.
- Personal calculators, log tables, mobile phones, and other electronic gadgets are strictly prohibited in the examination hall.
- A simple on-screen (virtual) calculator is provided in the computer-based test interface and may be used; blank sheets for rough work are supplied at the exam centre.

Q1. At STP (273 K, 1 atm), 1 mole of any ideal gas occupies 22.4 L. The number of moles of nitrogen gas present in 5.6 L of N_2 measured at STP is

(A) 0.025 mol

(B) 0.10 mol

(C) 0.25 mol

(D) 0.50 mol

Q2. For the hydrogen atom, the energy of the n^{th} level is $E_n = -\dfrac{13.6}{n^2}$ eV. The energy required to remove the electron completely from the ground state ($n = 1$ to $n = \infty$), i.e. the ionization energy of hydrogen, is

(A) 3.40 eV

(B) 13.6 eV

(C) 10.2 eV

(D) 27.2 eV

Q3. Among the elements F, Cl, O and N, the one with the most negative (most exothermic) electron gain enthalpy is

(A) Cl

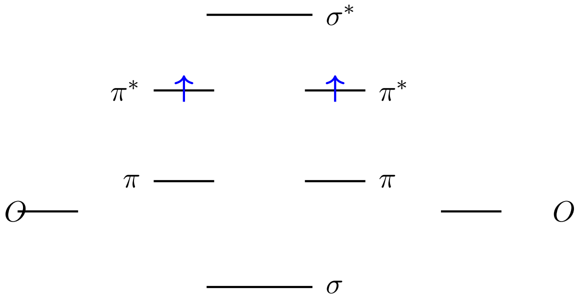
(B) F

(C) O

(D) N

Q4. Using molecular orbital theory, the species O_2, O_2^+, O_2^- and O_2^{2-} have different numbers of electrons in the antibonding π^* orbitals (see the diagram for O_2). Which species has the *highest* bond order?

(antibonding π^* shown for O_2)



(A) O_2

(B) O_2^-

(C) O_2^{2-}

(D) O_2^+

Q5. For the combustion of graphite, $C(s) + O_2(g) \to CO_2(g)$, carried out at 300 K, the change in internal energy is $\Delta U = -393.0\ \mathrm{kJ\,mol^{-1}}$. Using $\Delta H = \Delta U + \Delta n_g RT$ with $R = 8.314 \times 10^{-3}\ \mathrm{kJ\,K^{-1}\,mol^{-1}}$, the enthalpy change ΔH for the reaction is

(A) $-393.0\ \mathrm{kJ\,mol^{-1}}$

(B) $-395.5\ \text{kJ mol}^{-1}$

(C) $-390.5\ \text{kJ mol}^{-1}$

(D) $-396.0\ \text{kJ mol}^{-1}$

Q6. For the reaction $A(g) + B(g) \rightleftharpoons C(g)$, the equilibrium constant is $K_c = 50$. At a certain instant the concentrations are $[A] = [B] = [C] = 1.0\ \text{mol L}^{-1}$, so the reaction quotient is $Q_c = 1.0$. The reaction will

(A) be at equilibrium, no net change

(B) shift towards the reactants (reverse direction)

(C) not proceed in either direction

(D) shift towards the product (forward direction)

Q7. Consider the redox reaction $Zn(s) + Cu^{2+}(aq) \rightarrow Zn^{2+}(aq) + Cu(s)$. In this reaction, the correct identification of the oxidized species and the change in oxidation state of copper is

(A) Cu^{2+} is oxidized; Cu changes from $+2$ to 0

(B) Zn is oxidized; Cu changes from $+2$ to 0

(C) Zn is reduced; Cu changes from 0 to $+2$

(D) Cu^{2+} is reduced; Zn changes from $+2$ to 0

Q8. A fixed mass of an ideal gas occupies 2.0 L at 300 K and 1.0 atm. It is heated to 400 K while the pressure is raised to 2.0 atm. Using $\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$, the new volume V_2 is

(A) 0.75 L

(B) 2.67 L

(C) 1.33 L

(D) 1.50 L

Q9. When 3.0 g of a non-volatile, non-electrolyte solute is dissolved in 100 g of water, the freezing point of the solution falls by 0.93 K. Taking $K_f = 1.86$ K kg mol^{-1} for water, the molar mass of the solute is

(A) 60 g mol^{-1}

(B) 30 g mol^{-1}

(C) 120 g mol^{-1}

(D) 90 g mol^{-1}

Q10. In the electrolysis of molten $AlCl_3$, aluminium is deposited at the cathode by the reaction $Al^{3+} + 3e^- \rightarrow Al$. The quantity of charge required to deposit 0.9 g of aluminium (atomic mass $= 27$ g mol^{-1}, Faraday constant $F = 96500$ C mol^{-1}) is

(A) 3215 C

(B) 9650 C

(C) 28950 C

(D) 96500 C

Q11. A reaction follows zero-order kinetics with a rate constant $k = 0.02$ mol L^{-1} s^{-1}. If the initial concentration of the reactant is $[A]_0 = 0.50$ mol L^{-1}, the time required for the reaction to reach completion ($[A] = 0$) is

(A) 10 s

(B) 50 s

(C) 25 s

(D) 100 s

Q12. Among the following aqueous ions, the one that is *colourless* (because its d sub-shell is either empty or completely filled, allowing no d–d transition) is

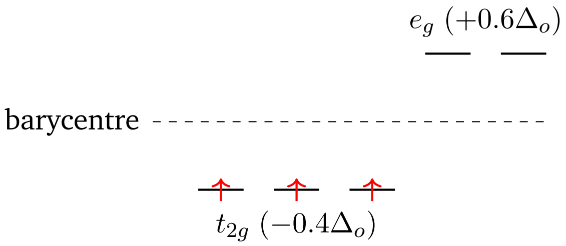
(A) Cu^{2+} $(3d^9)$

(B) Ni^{2+} $(3d^8)$

(C) Mn^{2+} $(3d^5)$

(D) Zn^{2+} $(3d^{10})$

Q13. For an octahedral complex, the d orbitals split into a lower t_{2g} set $(-0.4\Delta_o$ each) and an upper e_g set $(+0.6\Delta_o$ each), as shown. For a d^3 ion in a weak octahedral field (electrons fill singly, lowest first), the crystal field stabilization energy (CFSE) is



(A) $-1.2\Delta_o$

(B) $-0.8\Delta_o$

(C) $-1.6\Delta_o$

(D) $-0.6\Delta_o$

Q14. Examine the pair of structures shown below. They have the same molecular formula C_2H_6O but different functional groups.

$CH_3 - CH_2 - OH$ (I) ethanol

$CH_3 - O - CH_3$ (II) dimethyl ether

The relationship between structures (I) and (II) is best described as

(A) position isomerism

(B) functional isomerism

(C) chain isomerism

(D) metamerism

Q15. 2-bromobutane undergoes dehydrohalogenation (elimination of HBr with alcoholic KOH). The carbon skeleton with the leaving Br is shown.

$$CH_3 - CHBr - CH_2 - CH_3$$

C-2 bears the Br

Counting geometrical isomers separately, the total number of distinct alkene products formed is

(A) 1

(B) 2

(C) 3

(D) 4

Q16. When 2-bromobutane is treated with alcoholic KOH, two alkenes are possible: but-1-ene and but-2-ene. According to Saytzeff's rule, the *major* product is

(A) but-1-ene (the less substituted, terminal alkene)

(B) butane (no double bond forms)

(C) butan-2-ol (substitution product)

(D) but-2-ene (the more substituted, internal alkene)

Q17. Formaldehyde ($HCHO$) is treated with methylmagnesium bromide (CH_3MgBr), and the resulting addition product is then hydrolysed with dilute acid. The final organic product is

(A) methanal (formaldehyde regenerated)

(B) propan-2-ol

(C) ethanol

(D) methanol

Q18. The primary alcohol shown below is treated with acidified potassium dichromate ($K_2Cr_2O_7/H^+$), a strong oxidizing agent, until oxidation is complete.

$$CH_3 - CH_2 - CH_2OH$$

propan-1-ol

The final organic product of complete oxidation is

(A) propanoic acid (CH_3CH_2COOH)

(B) propanal (CH_3CH_2CHO)

(C) propan-2-ol

(D) propanone (CH_3COCH_3)

Q19. Aniline ($C_6H_5NH_2$) is treated with acetic anhydride [$(CH_3CO)_2O$]. The major organic product of this acetylation is

(A) N, N-dimethylaniline

(B) acetanilide ($C_6H_5NHCOCH_3$)

(C) anilinium acetate (a salt only)

(D) N-ethylaniline

Q20. Among the three common disaccharides sucrose, maltose and lactose, the one that is *non-reducing* (because both anomeric carbons are locked in the glycosidic bond) is

(A) maltose

(B) lactose

(C) both maltose and lactose

(D) sucrose

Detailed Solutions

Q1.

Solution

Concept — Molar gas volume at STP: At STP one mole of any ideal gas occupies 22.4 L, so moles $= \dfrac{\text{volume at STP}}{22.4}$.

Step 1 — Apply the relation: $n = \dfrac{V}{22.4} = \dfrac{5.6}{22.4}$.

Step 2 — Compute: $\dfrac{5.6}{22.4} = 0.25$ mol.

Why other options are wrong:

- (A) 0.025 mol is off by a factor of ten.
- (B) 0.10 mol would correspond to 2.24 L.
- (D) 0.50 mol would correspond to 11.2 L.

Final Answer: 0.25 mol $\Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q1

Q2.

Solution

Concept — Ionization energy of hydrogen: The ionization energy is the energy needed to take the electron from the ground state ($n = 1$) to free ($n = \infty$), i.e. $E_\infty - E_1$.

Step 1 — Level energies: $E_1 = -\dfrac{13.6}{1^2} = -13.6$ eV; $E_\infty = -\dfrac{13.6}{\infty^2} = 0$ eV.

Step 2 — Energy required: $\Delta E = E_\infty - E_1 = 0 - (-13.6) = +13.6$ eV.

Why other options are wrong:

- (A) 3.40 eV is $|E_2|$, not the ground-state ionization energy.
- (C) 10.2 eV is the $n = 1 \to n = 2$ excitation energy.
- (D) 27.2 eV doubles the correct value.

Final Answer: 13.6 eV $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q2

Q3.

Solution

Concept — Electron gain enthalpy trend: Adding an electron is most exothermic for halogens. Although F is above Cl, the very small $2p$ shell of F causes strong electron–electron repulsion, so Cl actually has the most negative electron gain enthalpy.

Step 1 — Compare halogens: For F, the incoming electron enters a compact $2p$ orbital with high repulsion; for Cl, the larger $3p$ orbital accommodates it more comfortably, releasing more energy.

Step 2 — Conclusion: $\Delta_{eg}H(Cl)$ is the most negative of the set.

Why other options are wrong:

- (B) F has a less negative value than Cl due to small-size repulsion.
- (C) O is less exothermic than the halogens.
- (D) N ($2p^3$ half-filled) has a near-zero/positive value.

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

Answer: (A) Go Back to Q3

Q4.

Solution

Concept — Bond order from MOT: Bond order $= \frac{1}{2}(N_b - N_a)$. Adding electrons to antibonding π^* orbitals lowers the bond order; removing them raises it.

Step 1 — Antibonding electrons: O_2 has 2 electrons in π^* (bond order 2). O_2^+ has lost one π^* electron (1 in π^*); O_2^- has gained one (3 in π^*); O_2^{2-} has gained two (4 in π^*).

Step 2 — Bond orders: $O_2^+ : 2.5$; $O_2 : 2.0$; $O_2^- : 1.5$; $O_2^{2-} : 1.0$. The highest is O_2^+.

Why other options are wrong:

- (A) O_2 has bond order 2.0.
- (B) O_2^- has bond order 1.5.
- (C) O_2^{2-} has the lowest bond order, 1.0.

Final Answer: O_2^+ (bond order 2.5) $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q4

Q5.

Solution

Concept — Relation between ΔH and ΔU: $\Delta H = \Delta U + \Delta n_g RT$, where Δn_g is the change in moles of gas.

Step 1 — Find Δn_g: For $C(s) + O_2(g) \rightarrow CO_2(g)$, gaseous moles: products $= 1$, reactants $= 1$ (the solid is not counted). So $\Delta n_g = 1 - 1 = 0$.

Step 2 — Compute: $\Delta H = \Delta U + 0 \cdot RT = \Delta U = -393.0\ \text{kJ mol}^{-1}$.

Why other options are wrong:

- (B), (C), (D) all assume $\Delta n_g \neq 0$; here the gaseous moles balance, so the RT term vanishes.

Final Answer: $\Delta H = -393.0\ \text{kJ mol}^{-1} \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q5

Q6.

Solution

Concept — Reaction quotient versus K: If $Q_c < K_c$, the reaction proceeds forward (towards products); if $Q_c > K_c$, it proceeds in reverse; if $Q_c = K_c$, it is at equilibrium.

Step 1 — Compare: Here $Q_c = 1.0$ and $K_c = 50$, so $Q_c < K_c$.

Step 2 — Predict direction: Since Q_c is below K_c, more product must form, so the reaction shifts forward (towards C).

Why other options are wrong:

- (A) Equilibrium requires $Q_c = K_c$, which is not the case.
- (B) A reverse shift needs $Q_c > K_c$.
- (C) A net reaction must occur because $Q_c \neq K_c$.

Final Answer: Shifts towards the product (forward) $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q6

Q7.

Solution

Concept — Oxidation and reduction: The species that loses electrons (its oxidation state rises) is oxidized; the species that gains electrons (its oxidation state falls) is reduced.

Step 1 — Track zinc: Zn goes from 0 to $+2$, losing two electrons, so Zn is oxidized (it is the reducing agent).

Step 2 — Track copper: Cu^{2+} goes from $+2$ to 0, gaining two electrons, so copper is reduced.

Why other options are wrong:

- (A) Cu^{2+} is reduced, not oxidized.
- (C) Zn is oxidized, not reduced; copper's change is stated backwards.
- (D) The copper change $(+2 \to 0)$ is right but it claims Zn goes $+2 \to 0$, which is reversed.

Final Answer: Zn is oxidized; Cu changes $+2 \to 0 \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q7

Q8.

Solution

Concept — Combined gas law: $\dfrac{P_1V_1}{T_1} = \dfrac{P_2V_2}{T_2} \Rightarrow V_2 = V_1 \cdot \dfrac{P_1}{P_2} \cdot \dfrac{T_2}{T_1}$.

Step 1 — Substitute: $V_2 = 2.0 \times \dfrac{1.0}{2.0} \times \dfrac{400}{300}$.

Step 2 — Compute: $V_2 = 2.0 \times 0.5 \times 1.333 = 1.33$ L.

Why other options are wrong:

- (A) 0.75 L inverts the temperature ratio.
- (B) 2.67 L inverts the pressure ratio.
- (D) 1.50 L ignores the temperature change.

Final Answer: $V_2 = 1.33$ L $\Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q8

Q9.

Solution

Concept — Molar mass from ΔT_f: $\Delta T_f = K_f\, m = K_f \cdot \dfrac{w_2/M_2}{w_1(\text{kg})}$, so $M_2 = \dfrac{K_f\, w_2}{\Delta T_f\, w_1(\text{kg})}$.

Step 1 — Insert values: $w_2 = 3.0$ g, $w_1 = 0.100$ kg, $K_f = 1.86$, $\Delta T_f = 0.93$ K.

$$M_2 = \frac{1.86 \times 3.0}{0.93 \times 0.100} = \frac{5.58}{0.093}.$$

Step 2 — Compute: $M_2 = 60\ \text{g mol}^{-1}$.

Why other options are wrong:

- (B) $30\ \text{g mol}^{-1}$ assumes a ΔT_f twice as large.
- (C) $120\ \text{g mol}^{-1}$ halves the true ΔT_f.
- (D) $90\ \text{g mol}^{-1}$ does not satisfy the equation.

Final Answer: $M_2 = 60\ \text{g mol}^{-1} \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q9

Q10.

Solution

Concept — Faraday's law: Charge $Q = n_e \times F$, where n_e is the moles of electrons; for $Al^{3+} + 3e^- \to Al$, three electrons are needed per Al atom.

Step 1 — Moles of Al: $n_{Al} = \dfrac{0.9}{27} = 0.0333$ mol.

Step 2 — Moles of electrons and charge: $n_e = 3 \times 0.0333 = 0.10$ mol; $Q = 0.10 \times 96500 = 9650$ C.

Why other options are wrong:

- (A) 3215 C uses only one electron per Al.
- (C) 28950 C multiplies by an extra factor of three.
- (D) 96500 C is the charge for 1 mol of electrons (deposits much more Al).

Final Answer: $Q = 9650\ \text{C} \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q10

Q11.

Solution

Concept — Zero-order kinetics: For a zero-order reaction, $[A] = [A]_0 - kt$. Completion means $[A] = 0$, so the time for completion is $t = \dfrac{[A]_0}{k}$.

Step 1 — Substitute: $[A]_0 = 0.50\ \mathrm{mol\,L^{-1}}$, $k = 0.02\ \mathrm{mol\,L^{-1}\,s^{-1}}$.

Step 2 — Compute: $t = \dfrac{0.50}{0.02} = 25$ s.

Why other options are wrong:

- (A) 10 s uses $[A]_0 = 0.20$.
- (B) 50 s uses $k = 0.01$.
- (D) 100 s double-counts the time.

Final Answer: $t = 25$ s $\Rightarrow \boxed{\text{C}}$

$\boxed{\textbf{Answer: (C)}}$ **Go Back to Q11**

Q12.

Solution

Concept — Colour and d–d transitions: A transition-metal ion is coloured only if partially filled d orbitals allow d–d electronic transitions. An empty (d^0) or completely filled (d^{10}) sub-shell permits no such transition, so the ion is colourless.

Step 1 — Examine Zn^{2+}: Zn^{2+} has the configuration $3d^{10}$, a fully filled d sub-shell, so no d–d transition is possible and the ion is colourless.

Step 2 — The others: Cu^{2+} ($3d^9$), Ni^{2+} ($3d^8$) and Mn^{2+} ($3d^5$) all have partially filled d orbitals and are coloured.

Why other options are wrong:

- (A) Cu^{2+} ($3d^9$) is blue.
- (B) Ni^{2+} ($3d^8$) is green.
- (C) Mn^{2+} ($3d^5$) is pale pink.

Final Answer: Zn^{2+} ($3d^{10}$) is colourless $\Rightarrow \boxed{\text{D}}$

$\boxed{\textbf{Answer: (D)}}$ **Go Back to Q12**

Q13.

Solution

Concept — CFSE for octahedral fields: CFSE $= [\,n(t_{2g}) \times (-0.4) + n(e_g) \times (+0.6)\,]\Delta_o$, where n is the number of electrons in each set.

Step 1 — Fill a d^3 ion (weak field): The three electrons occupy the three t_{2g} orbitals singly; e_g remains empty. So $n(t_{2g}) = 3$, $n(e_g) = 0$.

Step 2 — Compute CFSE: CFSE $= 3(-0.4\Delta_o) + 0 = -1.2\Delta_o$.

Why other options are wrong:

- (B) $-0.8\Delta_o$ corresponds to only two t_{2g} electrons.
- (C) $-1.6\Delta_o$ corresponds to four t_{2g} electrons.
- (D) $-0.6\Delta_o$ wrongly puts an electron in e_g.

Final Answer: CFSE $= -1.2\Delta_o \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q13

Q14.

Solution

Concept — Functional isomerism: When two compounds share the same molecular formula but belong to different functional-group classes, they are functional isomers.

Step 1 — Identify the classes: (I) CH_3CH_2OH is an alcohol; (II) CH_3OCH_3 is an ether. Both are C_2H_6O.

Step 2 — Classify: Same formula, different functional groups (alcohol versus ether) $\Rightarrow$ functional isomerism.

Why other options are wrong:

- (A) Position isomerism keeps the same functional group, only its position changes.
- (C) Chain isomerism differs in carbon-skeleton branching with the same functional group.
- (D) Metamerism is different alkyl groups around the *same* functional group (e.g. two ethers); here the groups differ.

Final Answer: Functional isomerism $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q14

Q15.

Solution

Concept — Products of dehydrohalogenation: Eliminating HBr from 2-bromobutane can remove a β-hydrogen from C-1 or from C-3, giving different alkenes; internal alkenes can also show geometrical (cis/trans) isomerism.

Step 1 — Possible alkenes: Removing H from C-1 gives but-1-ene; removing H from C-3 gives but-2-ene. But-2-ene exists as *cis* and *trans*.

Step 2 — Count distinct products: but-1-ene, *cis*-but-2-ene, *trans*-but-2-ene $= 3$ distinct alkenes.

Why other options are wrong:

- (A) 1 ignores both regiochemistry and geometry.
- (B) 2 counts but-2-ene as a single species.
- (D) 4 over-counts; but-1-ene has no cis/trans form.

Final Answer: 3 distinct alkenes $\Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q15

Q16.

Solution

Concept — Saytzeff's rule: In elimination reactions the major alkene is the more highly substituted (more stable) one, formed by loss of the β-hydrogen from the carbon with fewer hydrogens.

Step 1 — Compare products: but-1-ene ($CH_2 = CH - CH_2 - CH_3$) is a mono-substituted alkene; but-2-ene ($CH_3 - CH = CH - CH_3$) is a di-substituted (more substituted) alkene.

Step 2 — Apply Saytzeff: The more substituted but-2-ene is more stable, so it is the major product.

Why other options are wrong:

- (A) but-1-ene is the minor (less substituted) Hofmann product.
- (B) Butane has no double bond; elimination must give an alkene.
- (C) Butan-2-ol is a substitution product, not an elimination product.

Final Answer: but-2-ene (more substituted) $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q16

Q17.

Solution

Concept — Grignard synthesis of alcohols: A Grignard reagent $RMgX$ adds to a carbonyl; formaldehyde gives a primary alcohol with one more carbon than the alkyl group of the reagent, after acid hydrolysis.

Step 1 — Addition: $HCHO + CH_3MgBr \to CH_3 - CH_2 - OMgBr$.

Step 2 — Hydrolysis: $CH_3CH_2OMgBr + H_2O/H^+ \to CH_3CH_2OH$ (ethanol).

Why other options are wrong:

- (A) Formaldehyde is consumed; it is not regenerated.
- (B) Propan-2-ol needs a ketone (acetaldehyde) plus the Grignard, not formaldehyde.
- (D) Methanol would require addition to no carbon source (formaldehyde alone gives methanol only on reduction, not with CH_3MgBr).

Final Answer: Ethanol $\Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q17

Q18.

Solution

Concept — Oxidation of a primary alcohol: A strong oxidant such as $K_2Cr_2O_7/H^+$ oxidizes a primary alcohol first to an aldehyde and then, on complete oxidation, all the way to a carboxylic acid.

Step 1 — First oxidation: $CH_3CH_2CH_2OH \xrightarrow{[O]} CH_3CH_2CHO$ (propanal).

Step 2 — Complete oxidation: $CH_3CH_2CHO \xrightarrow{[O]} CH_3CH_2COOH$ (propanoic acid).

Why other options are wrong:

- (B) Propanal is only the intermediate; complete oxidation goes further.
- (C) Propan-2-ol is a different (secondary) alcohol, not formed here.
- (D) Propanone needs a secondary alcohol; propan-1-ol is primary.

Final Answer: Propanoic acid (CH_3CH_2COOH) $\Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q18

Q19.

Solution

Concept — Acetylation of amines: A primary aromatic amine reacts with acetic anhydride, replacing one N–H hydrogen by an acetyl group ($-COCH_3$) to give an N-substituted amide (acetanilide).

Step 1 — Reaction: $C_6H_5NH_2 + (CH_3CO)_2O \rightarrow C_6H_5NHCOCH_3 + CH_3COOH$.

Step 2 — Product: The acetyl group caps the nitrogen, giving acetanilide (N-phenylacetamide).

Why other options are wrong:

- (A) N, N-dimethylaniline comes from methylation, not acetylation.
- (C) A mere salt ignores the C–N acyl bond actually formed.
- (D) N-ethylaniline is an alkylation product, not an amide.

Final Answer: Acetanilide ($C_6H_5NHCOCH_3$) $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q19

Q20.

Solution

Concept — Non-reducing disaccharide: A disaccharide is reducing only if it retains a free anomeric (hemiacetal) carbon. If both anomeric carbons are tied up in the glycosidic linkage, the sugar is non-reducing.

Step 1 — Examine sucrose: In sucrose the glycosidic bond joins the anomeric C-1 of glucose to the anomeric C-2 of fructose, leaving no free reducing group.

Step 2 — The others: Maltose and lactose each keep one free anomeric carbon, so both are reducing sugars.

Why other options are wrong:

- (A) Maltose has a free anomeric carbon (reducing).
- (B) Lactose has a free anomeric carbon (reducing).
- (C) Neither maltose nor lactose is non-reducing.

Final Answer: Sucrose $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q20

Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	C	2	B	3	A	4	D	5	A
6	D	7	B	8	C	9	A	10	B
11	C	12	D	13	A	14	B	15	C
16	D	17	C	18	A	19	B	20	D