



# TECHNO INDIA GROUP PUBLIC SCHOOL

## MOCK TEST-1 (2025-2026)

### CLASS-XII

Subject Code **043**

Roll No. 

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Candidates must write the code on the title page of the answer-book.

## CHEMISTRY

Time allowed : 3 hours

Maximum Marks : 70

### General Instruction:

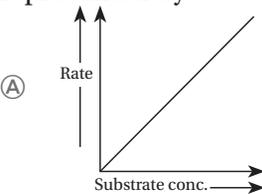
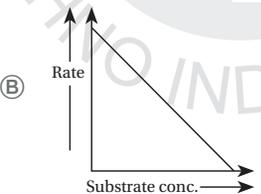
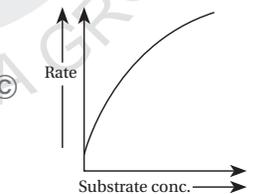
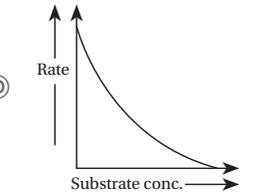
Read the following instructions carefully and follow them :

1. There are 33 questions in this question paper with internal choice.
2. SECTION A consists of 16 multiple-choice questions carrying 1 mark each.
3. SECTION B consists of 5 short answer questions carrying 2 marks each
4. SECTION C consist of 7 short answer questions carrying 3 marks each.
5. SECTION D consists of 2 case-based questions carrying 4 marks each.
6. SECTION E consists of 3 long answer questions carrying 5 marks each.
7. All questions are compulsory.
8. Use of log tables and calculators are not allowed.
9. Draw neat figures wherever required. Take  $\pi = 22/7$  wherever required if not stated.

### SECTION A

**Section A: Question 1 to 16 are multiple choice questions. Only one of the choices is correct. Select and write the correct choice as well as the answer to those questions**

1.	Reaction of aniline with concentrated $\text{HNO}_3$ and concentrated $\text{H}_2\text{SO}_4$ at 288 K will produce mainly (A) p-nitroaniline    (B) 1,3-dinitroaniline    (C) o-nitroaniline    (D) 2,4-dinitroaniline	[1]
2.	Two compounds A and B have the general formula $\text{C}_n\text{H}_{2n}\text{O}_2$ but different structural formula is (i) Compound A belongs to that homologous series where the second member contains 2 carbon atoms (ii) Compound B is formed when $\text{CH}_3\text{OH}$ reacts with first member of homologous series of A in the presence of concentrated $\text{H}_2\text{SO}_4$ Identify the homologous series to which compounds A and B belong to? (A) Both the compounds are carboxylic acids (B) Compound A is carboxylic acid, compound B is an ester. (C) Both compounds are esters (D) Compound A is an ester and B is carboxylic acid	[1]

3.	Which one does not stabilise secondary and tertiary structure of proteins? (A) O-O linkage (B) S-S linkage (C) Vanderwaals' forces (D) Hydrogen bond	[1]
4.	Compound X reacts with I <sub>2</sub> and NaOH to give CHI <sub>3</sub> and CH <sub>3</sub> COONa. It does not give Fehling's solution test. X is (A) CH <sub>3</sub> CHO (B) C <sub>6</sub> H <sub>5</sub> CHO (C) CH <sub>3</sub> -C(=O)-CH <sub>3</sub> (D) CH <sub>3</sub> -C(=O)-C <sub>6</sub> H <sub>5</sub>	[1]
5.	Which of the following reacts faster forwards SN <sup>1</sup> ? (A) C <sub>6</sub> H <sub>5</sub> Cl (B) C <sub>6</sub> H <sub>5</sub> -CH(CH <sub>3</sub> )-Cl (C) C <sub>6</sub> H <sub>5</sub> CH <sub>2</sub> -CH <sub>2</sub> Cl (D) CH <sub>3</sub> CH <sub>2</sub> -CH <sub>2</sub> Cl	[1]
6.	Match the following: Column I (p) E <sup>0</sup> <sub>Cu<sup>2+</sup>/Cu (q) E<sup>0</sup><sub>Cr<sup>2+</sup>/Cr (r) E<sup>0</sup><sub>V<sup>2+</sup>/V (s) E<sup>0</sup><sub>Ni<sup>2+</sup>/Ni Column II 1. -0.90 V 2. -1.18 V 3. +0.34 V 4. -0.25 V (A) p-1, q-2, r-3, s-4 (B) p-4, q-3, r-2, s-1 (C) p-2, q-3, r-1, s-4 (D) p-3, q-1, r-2, s-4</sub></sub></sub></sub>	[1]
7.	The variation of enzyme catalysed reaction with substrate concentrated Vs rate is correctly represented by (A)  (B)  (C)  (D) 	[1]
8.	C <sub>6</sub> H <sub>5</sub> N <sub>2</sub> <sup>+</sup> Cl <sup>-</sup> $\xrightarrow{\text{Cu/HBr}}$ product and name of reaction is (A) C <sub>6</sub> H <sub>5</sub> CH <sub>2</sub> Br, Sandmeyer's reaction (B) C <sub>6</sub> H <sub>5</sub> Br, Gattermann reaction (C) C <sub>6</sub> H <sub>5</sub> Br, Finkelstein reaction (D) C <sub>6</sub> H <sub>5</sub> Br, Balz Schiemann reaction	[1]
9.	2C <sub>2</sub> H <sub>5</sub> Cl + 2Na $\xrightarrow{\text{Dry ether}}$ (A) C <sub>2</sub> H <sub>6</sub> (B) C <sub>3</sub> H <sub>8</sub> (C) H <sub>2</sub> C=CH <sub>2</sub> (D) CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub>	[1]
10.	Excess of alkyl halide react with NH <sub>3</sub> to give final product (A) R <sub>4</sub> N <sup>+</sup> X <sup>-</sup> (B) R <sub>3</sub> N only (C) RNH <sub>2</sub> only (D) R <sub>2</sub> NH only	[1]
11.	For a radioactive decay t <sub>1/2</sub> = 15 years. The rate constant is equal to (A) 0.0462 s <sup>-1</sup> (B) 0.0462 year <sup>-1</sup> (C) 0.0462 min <sup>-1</sup> (D) 4.62 × 10 <sup>-3</sup> year <sup>-1</sup>	[1]
12.	A metal ion has μ <sub>B</sub> = 4.92 B.M, the number of unpaired electrons are equal to (A) 3 (B) 4 (C) 5 (D) 2	[1]

**Assertion (A)—Reason (R) [Q No. 13–16]****Directions:** Read the following questions and choose any one of the following four responses.

- A. If both Assertion and Reason are true and Reason is the correct explanation of the Assertion.  
 B. If both Assertion and Reason are true but Reason is not a correct explanation of the Assertion.  
 C. If Assertion is true but the Reason is false.  
 D. If Assertion is false but Reason is true.

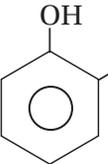
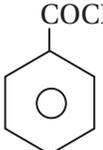
13.	<b>Assertion (A):</b> Nucleotides are formed together by phosphodiester linkage between 5' and 3' carbon atoms of the pentose sugar. <b>Reason (R):</b> <i>m</i> -RNA, <i>t</i> -RNA and <i>r</i> -R.N.A. are involved in protein synthesis. (A) A                                      (B) B                                      (C) C                                      (D) D	[1]
14.	<b>Assertion (A):</b> Dry cell is a primary cell. <b>Reason (R):</b> Lead storage battery is secondary cell. (A) A                                      (B) B                                      (C) C                                      (D) D	[1]
15.	<b>Assertion (A):</b> $\text{Ni}(\text{CO})_4$ is $\text{sp}^3$ hybridised, tetrahedral shaped. <b>Reason (R):</b> Nickel is in zero oxidation state. (A) A                                      (B) B                                      (C) C                                      (D) D	[1]
16.	<b>Assertion (A):</b> Rate of reaction decreases with increase in temperature. <b>Reason (R):</b> Number of effective collision increase in temperature. (A) A                                      (B) B                                      (C) C                                      (D) D	[1]

**SECTION B****Question no. 17 to 21 are very short answer questions, carrying 2 marks each.**

17.	Boiling point of 2% aqueous solution of non-volatile solute is equal to 8% aqueous solution of non-volatile <i>B</i> . Calculate ratio of $M_A$ and $M_B$ in whole number.	[2]
18.	Attempt any two : (a) Arrange isomers of dichlorobenzene in increasing order of dipole moment. (b) Why R-I most reactive among alkyl halides? (c) Why is Grignard reagent is anhydrous condition?	[2]
19.	(a) What is general electronic configuration of <i>f</i> -block elements. (b) Why is $\text{Eu}^{3+}$ good oxidising agent? <p style="text-align: center;">OR</p> (c) Why is $\text{Fe}^{2+}$ good reducing agent? (d) Why is $\text{CrO}_3$ is acidic whereas $\text{CrO}$ is basic?	[2]
20.	(a) How is standard free energy for a reaction is related to equilibrium constant? (b) How much electricity in terms of Faraday is required to produce 40 g of Al from molten $\text{Al}_2\text{O}_3$ ?	[2]
21.	(a) Why are globular proteins soluble in water but fibrous protein are insoluble? (b) Write chemical reaction of fructose with HCN.	[2]

## SECTION C

Question No. 22 to 28 are short answer questions, carrying 3 marks each

22.	(a) Write the role of co-ordination compounds with an example of each of the following: (i) Biological system (ii) Extraction of metals (b) Write IUPAC name of $[\text{Co}(\text{NH}_3)_3(\text{H}_2\text{O})_3]\text{Cl}_3$ . What type of isomerism does it show?	[3]
23.	(a) State Faradays second law of electrolysis. (b) What happens if external potential applied becomes greater than $E_{\text{cell}}^0$ in electrochemical cell? (c) What is sign of $E_{\text{cell}}^0$ and $\Delta G$ for spontaneous redox reaction?	[3]
24.	<p>Complete the following:</p> <p>(a) <math>\text{C}_6\text{H}_5\text{CHO} + </math>  <math>\text{MgBr} \longrightarrow A \xrightarrow{\text{H}_3\text{O}^+} B \xrightarrow[573\text{ K}]{\text{Cu}} C</math></p> <p>(b)  <math>+ \text{CH}_3\text{Br} \longrightarrow A \xrightarrow{\text{HI}} B \xrightarrow{\text{Br}_2(\text{aq})} C</math></p> <p>(c)  <math>\xrightarrow{\text{dil. HNO}_3} A \xrightarrow{\text{Sn/HCl}} B \xrightarrow[\Delta]{\text{Zn dust}} C</math></p>	[3]
25.	<p>Complete the following reaction (Attempt any 3) :</p> <p>(a)  <math>+ \text{H}_2\text{N}-\overset{\text{O}}{\parallel}{\text{C}}-\text{NH}-\text{NH}_2 \longrightarrow A</math></p> <p>(b)  <math>+ \text{Mg} \longrightarrow A \xrightarrow[\text{(ii) H}_2\text{O/H}^+]{\text{(i) CO}_2} B</math></p> <p>(c) <math>\text{C}_6\text{H}_5\text{C}\equiv\text{N} \xrightarrow{\text{SnCl}_2/\text{HCl}} A \xrightarrow{\text{H}_2\text{O/H}^+} B</math></p> <p>(d)  <math>\xrightarrow[\Delta]{\text{K}_2\text{Cr}_2\text{O}_7/\text{conc. H}_2\text{SO}_4} C</math></p>	[3]





33.	<p>(a) How will you carry out the following conversions</p> <p>(i) Anisole to 2-methoxyacetophenon</p> <p>(ii) Propene to propan-2-ol</p> <p>(iii) Ethanol to Ethanal</p> <p>(b) A compound (<i>X</i>) <math>C_5H_{10}</math> on Ozonolysis, followed by <math>Zn/H_2O</math> gives <i>A</i> and <i>B</i>. <i>A</i> and <i>B</i> both give iodoform test but <i>B</i> does not give Tollens' reagent test. Identify <i>A</i> and <i>B</i> and write the reactive involved in <i>X</i> to <i>A</i> and <i>B</i>.</p> <p style="text-align: center;">OR</p> <p>(a) 2-methyl-but-zene <math>[(CH_3)_3C=CH-CH_3]</math> is reacted with water in the presence of an acid catalyst</p> <p>(i) Predict and write the structures of the major and minor products formed in the reaction.</p> <p>(ii) give the reaction mechanism to explain the formation of the major product.</p> <p>(b) Complete the following reactions:</p> <p>(i) <math>CH_3COOH \xrightarrow{F_2/Cl_2} A \xrightarrow{KOH(aq)} B.</math></p> <p>(ii) <math>C_6H_5COOH \xrightarrow{SOCl_2} A \xrightarrow{H_2/Pd, BaSO_4} B</math></p>	[5]
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