JEE Main 2026 Session 2 Chemistry Shift 1

Question Paper

Conducted by National Testing Agency (NTA)

General Instructions

(i) The test is of 3 hours duration.

(ii) This test paper consists of 75 questions. Each subject (PCM) has 25 questions. The maximum marks are 300.

(iii) This question paper contains Three Parts. Part-A is Physics, Part-B is Chemistry and Part-C is Mathematics. Each part has only two sections: Section-A and Section-B.

(iv) Section - A : Attempt all questions.

(v) Section - B : Attempt all questions.

(vi) Section - A (01 – 20) contains 20 multiple choice questions which have only one correct answer. Each question carries +4 marks for correct answer and –1 mark for wrong answer.

(vii) Section - B (21 – 25) contains 5 Numerical value based questions. The answer to each question should be rounded off to the nearest integer. Each question carries +4 marks for correct answer and –1 mark for wrong answer.

1. For first order reaction, rate constant at 27°C and $t°$ are 1.5×10^3 and 4.5×10^3 respectively. If activation energy of the reaction is 60 KJmol^{-1}, then (R = 8.3 Jmol^{-1}K^{-1}, ln 3 = 1.1) Find temperature t (in °C).

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2. One mole of an alkane on complete combustion required 8 moles of O_2, find out the sum of carbon and hydrogen atoms in one molecule of the alkane.

3. Relation between $t_{1/2}$ and $t_{100\%}$ for zero order and first order reaction respectively is:

(A) $t_{100\%} = 2 \times t_{1/2} : t_{100\%} = 2 \times t_{1/2}$

(B) $t_{100\%} = 2 \times t_{1/2} : t_{100\%} = t_{1/2}$

(C) $t_{100\%} = 2 \times t_{1/2} : t_{100\%} = \infty$

(D) $t_{100\%} = \infty : t_{100\%} = 2 \times t_{1/2}$

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4. 18 g of steam reacted with iron to form Fe_3O_4, how much iron will be consumed?

(A) 21 gm

(B) 42 gm

(C) 84 gm

(D) 10.5 gm

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5. Angular momentum of the electron in a hydrogen atom is $\frac{3h}{2\pi}$, then find the total energy of the electron (in eV/atom)

(A) -1.51

(B) -122.4

(C) -40.8

(D) -4.53

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6. For a reversible adiabatic process involving ideal gas, if initial pressure and volume are 8 bar and 0.15 m^3 respectively, and final pressure is 1 bar.

Calculate |work done| (in Kilojoule)

$[C_v = 2R, C_p = 3R]$

7. For reaction A $\rightleftharpoons$ B

$\Delta G^\circ = 105 - 35 \log T$

Find the transition temperature (in °C) of the above reaction at 1 bar.

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8. Given $K_{sp}(\mathbf{Ag_2C_2O_4}) = 32X$ and $K_{sp}(\mathbf{AgBr}) = 4Y$,

Find the ratio of solubility of the given salts in pure water.

(A) $\frac{X^{1/3}}{\sqrt{2Y}}$

(B) $\frac{2X^{1/3}}{\sqrt{2Y}}$

(C) $\frac{2X^{1/3}}{\sqrt{Y}}$

(D) $\frac{X^{1/3}}{\sqrt{Y}}$

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9. 19.5 gm FCH_2COOH is dissolved in 500 gm water due to which depression in freezing point is found to be 1°C. Calculate K_a of FCH_2COOH.

Given:

The depression in freezing point, $\Delta T_f = 1^\circ C$

Mass of solute, m = 19.5 gm

Mass of solvent, M = 500 gm

K_f of water = 1.86 K kg/mole

m (molar mass of solute) = M

(A) 2.8×10^{-3}

(B) 2.8×10^{-2}

(C) 1.4×10^{-3}

(D) 5.6×10^{-3}

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10. Consider the following reaction:

$Fe(OH)_2 + 2e^- \longrightarrow Fe(s) + 2OH^-(aq)$ $E^\circ = -0.88\,V$

$AgBr(s) + e^- \longrightarrow Ag(s) + Br^-(aq)\ \ E^\circ = 0.07\,V$

Select the correct statement.

(A) $E^\circ_{cell} = -0.95\,V$

(B) E°_{cell} is an extensive property

(C) Fe is getting reduced

(D) Net cell reaction:

$Fe(s) + 2OH^-(aq) + 2AgBr(s) \longrightarrow Fe(OH)_2(s) + 2Ag(s) + 2Br^-(aq)$

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11. Match the column and select the correct option:

(i) Vit. B_1	(P) Ascorbic acid
(ii) Vit. B_2	(Q) Riboflavin
(iii) Vit. B_6	(R) Thiamine
(iv) Vit. C	(S) Pyridoxine

(A) (i) $\rightarrow$ R, (ii) $\rightarrow$ Q, (iii) $\rightarrow$ S, (iv) $\rightarrow$ P

(B) (i) $\rightarrow$ Q, (ii) $\rightarrow$ R, (iii) $\rightarrow$ S, (iv) $\rightarrow$ P

(C) (i) $\rightarrow$ R, (ii) $\rightarrow$ Q, (iii) $\rightarrow$ P, (iv) $\rightarrow$ S

(D) (i) $\rightarrow$ S, (ii) $\rightarrow$ Q, (iii) $\rightarrow$ R, (iv) $\rightarrow$ P

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12. Organic compound C_5H_{10} does not give Baeyer's reagent test. Calculate the total number of structural monobromo isomers when reacted with $Br_2/h\nu$.

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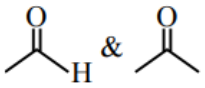
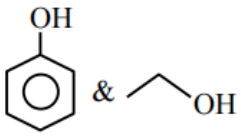
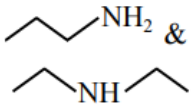
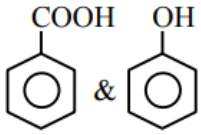
13. Match correctly with the reagents given in Column-I with organic compounds given in Column-II

	Column-I (Name of test)		Column-II (Pair of compounds)
(i)	Neutral $FeCl_3$ test	(P)	
(ii)	Isocyanide test $CHCl_3$ + KOH/Δ	(Q)	
(iii)	Ammonical silver nitrate test	(R)	
(iv)	$NaHCO_3$ test	(S)	

(A) (i)-Q, (ii)-R, (iii)-P, (iv)-S

(B) (i)-P, (ii)-Q, (iii)-R, (iv)-S

(C) (i)-R, (ii)-S, (iii)-Q, (iv)-P

(D) (i)-S, (ii)-R, (iii)-Q, (iv)-P

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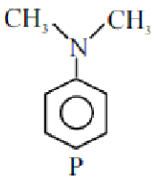
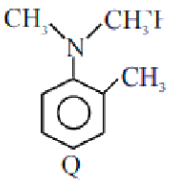
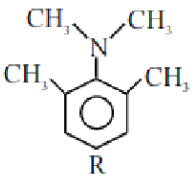
14. Write the correct order of rate of reaction of following compounds with PhN_2Cl


P


Q


R

(A) P > Q > R

(B) P > R > Q

(C) Q > P > R

(D) R > P > Q

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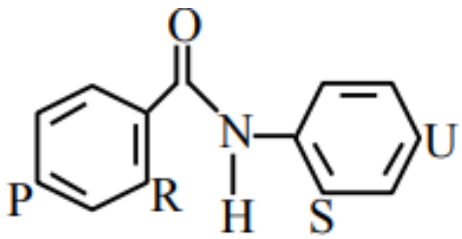
15. Most preferred site for electrophilic substitution in above example?



(A) Predominantly at U

(B) S and R

(C) Predominantly at R

(D) R and S

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16. Which of the following order is correct for priority of functional group in IUPAC nomenclature?

(A) $-CHO > -COOR > -CO > -CN > \equiv NH_2$

(B) $-CONH_2 > -CN > -CHO > -CO > -NH_2$

(C) $-CONH_2 > -COOR > -CN > -CHO > -CO > \equiv$

(D) $-COOR > -CN > -CONH_2 > -CHO > -CO > \equiv$

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17. Statement-1: Benzyl chloride reacts faster than ethyl chloride towards SN^1.
Statement-2: Positive charge on ethyl will be unstable.

(A) Statement-I and statement-II both are correct.

(B) Statement-I and statement-II both are incorrect.

(C) Statement-I correct but statement-II is incorrect.

(D) Statement-I incorrect but statement-II is correct.

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18. Statement-I: 1, 2, 3-trihydroxy propane can be separated from water by using simple distillation.

Statement-II: Azeotropic mixture cannot be separated by using fractional distillation.

(A) Statement-I and statement-II both are correct.

(B) Statement-I and statement-II both are incorrect.

(C) Statement-I correct but statement-II is incorrect.

(D) Statement-I incorrect but statement-II is correct.

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19. Statement-I: The correct increasing order of bond length among the following is $O_2^+ < O_2 < O_2^{2-} < O_2^2$

Statement-II: The correct order of number of unpaired electrons is $O_2^{2-} < O_2 < O_2^+ < O_2^2$

(A) Both Statement-I and Statement-II are correct

(B) Statement-I is correct and Statement-II is incorrect

(C) Statement-II is correct and Statement-I is incorrect

(D) Both Statement-I and Statement-II are incorrect

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20. Statement-I: The correct order of ionization energy is $Na > Mg > Al > Ar$

Statement-II: Among the following elements Sc, Ca, and Mg, Ca has highest 3rd ionization energy.

(A) Both Statement-I and Statement-II are correct

(B) Statement-I is correct but Statement-II is incorrect

(C) Statement-I is incorrect but Statement-II is correct

(D) Both Statement-I and Statement-II are incorrect

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21. Cation of salt A when treated in flame gives apple green colour. When salt A is heated with Chromate solution it gives yellow precipitate & when salt is heated with conc. HNO & Ammonium molybdate it gives canary yellow ppt. Salt A contains:

(A) Ba^{2+} and PO_4^{3-}

(B) Ca^{2+} and SO_4^{2-}

(C) Ba^{2+} and SO_4^{2-}

(D) Sr^{2+} and PO_4^{3-}

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22. 5.33 gram of $CrCl_3.6H_2O$ (1:3 electrolyte) is passed through cation exchanger. The resulting solution is then treated with an excess of $AgNO_3$, leading to formation of 8.61 gram of precipitate. Calculate:

$$\frac{\text{Number of moles of complex reacted}}{\text{Number of moles of AgCl precipitated}} \times 100$$

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23. Find the correct match.

	Column-I (Complex compound)	**Column-II (Δ_0 (CFSE) cm^{-1})**
(i)	$[Cr(CN)_6]^{3-}$	(P) 17000
(ii)	$[Cr(H_2O)_6]^{3+}$	(Q) 15000
(iii)	$[Cr(en)_3]^{3+}$	(R) 12000
(iv)	$[CrF_6]^{3-}$	(S) 20,000

(A) (i) $\rightarrow$ P; (ii) $\rightarrow$ Q; (iii) $\rightarrow$ S; (iv) $\rightarrow$ R

(B) (i) $\rightarrow$ S; (ii) $\rightarrow$ Q; (iii) $\rightarrow$ P; (iv) $\rightarrow$ R

(C) (i) $\rightarrow$ R; (ii) $\rightarrow$ P; (iii) $\rightarrow$ Q; (iv) $\rightarrow$ S

(D) (i) $\rightarrow$ P; (ii) $\rightarrow$ R; (iii) $\rightarrow$ Q; (iv) $\rightarrow$ S
