

# FINAL JEE-MAIN EXAMINATION – APRIL, 2023

(Held On Monday 10<sup>th</sup> April, 2023)

TIME : 9 : 00 AM to 12 : 00 NOON

## CHEMISTRY

### SECTION-A

61. Using column chromatography, mixture of two compounds 'A' and 'B' was separated. 'A' eluted first, this indicates 'B' has

- (1) low  $R_f$ , weaker adsorption
- (2) high  $R_f$ , stronger adsorption
- (3) high  $R_f$ , weaker adsorption
- (4) low  $R_f$ , stronger adsorption

**Official Ans. by NTA (4)**

**Allen Ans. (4)**

62. Prolonged heating is avoided during the preparation of ferrous ammonium sulphate to

- (1) prevent oxidation
- (2) prevent reduction
- (3) prevent hydrolysis
- (4) prevent breaking

**Official Ans. by NTA (1)**

**Allen Ans. (1)**

63. Lime reacts exothermally with water to give 'A' which has low solubility in water. Aqueous solution of 'A' is often used for the test of  $\text{CO}_2$ , a test in which insoluble B is formed. If B is further reacted with  $\text{CO}_2$  then soluble compound is formed 'A' is

- (1) Quick lime
- (2) Slaked lime
- (3) Lime water
- (4) White lime

**Official Ans. by NTA (2)**

**Allen Ans. (2)**

64. The pair from the following pairs having both compounds with net non-zero dipole moment is

- (1) Benzene, anisidine
- (2) 1,4-Dichlorobenzene, 1,3-Dichlorobenzene
- (3)  $\text{CH}_2\text{Cl}_2$ ,  $\text{CHCl}_3$
- (4) cis-butene, trans-butene

**Official Ans. by NTA (3)**

**Allen Ans. (3)**

## TEST PAPER WITH ANSWER

65. Match List-I with List-II

### List-I

#### Industry

- (A) Steel plants
- (B) Thermal power plants
- (C) Fertilizer industries
- (D) Paper mills

### List-II

#### Waste Generated

- (I) Gypsum
- (II) Fly ash
- (III) Slag
- (IV) Bio-degradable Wastes

Choose the correct answer from the options given below:

- (1) (A)-(III), (B)-(II), (C)-(I), (D)-(IV)
- (2) (A)-(II), (B)-(III), (C)-(IV), (D)-(I)
- (3) (A)-(IV), (B)-(I), (C)-(II), (D)-(III)
- (4) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

**Official Ans. by NTA (1)**

**Allen Ans. (1)**

66. Isomeric amines with molecular formula  $\text{C}_8\text{H}_{11}\text{N}$  give the following tests

Isomer (P)  $\Rightarrow$  Can be prepared by Gabriel phthalimide synthesis

Isomer (Q)  $\Rightarrow$  Reacts with Hinsberg's reagent to give solid insoluble in NaOH

Isomer (R)  $\Rightarrow$  Reacts with HONO followed by  $\beta$ -naphthol in NaOH to give red dye.

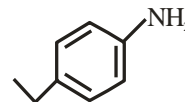
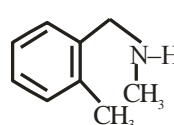
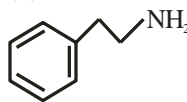
Isomers (P), (Q) and (R) respectively are

P

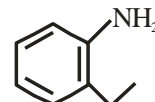
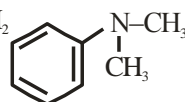
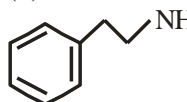
Q

R

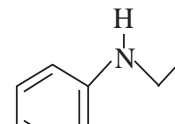
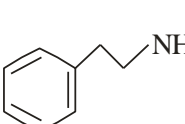
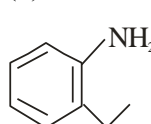
- (1)



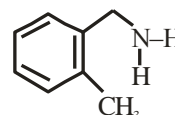
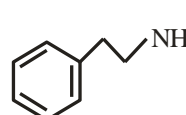
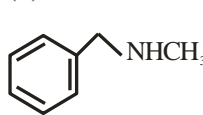
- (2)



- (3)



- (4)



**Official Ans. by NTA (1)**

**Allen Ans. (1)**

67. Given below are two statements

Statement I : Aqueous solution of  $K_2Cr_2O_7$  is preferred as a primary standard in volumetric analysis over  $Na_2Cr_2O_7$  aqueous solution

Statement II :  $K_2Cr_2O_7$  has a higher solubility in water than  $Na_2Cr_2O_7$

In the light of the above statements, choose the correct answer from the options given below:

- (1) Both Statement I and Statement II are true
- (2) Both Statement I and Statement II are false
- (3) Both Statement I is true but Statement II is false
- (4) Both Statement I is false but Statement II is true

**Official Ans. by NTA (3)**

**Allen Ans. (3)**

68. The one that does not stabilize  $2^\circ$  and  $3^\circ$  structures of proteins is

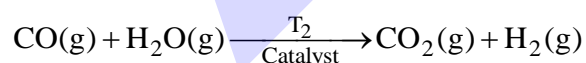
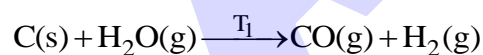
- (1) H-bonding
- (2) –S-S-linkage
- (3) –O-O-linkage
- (4) van der Waals forces

**Official Ans. by NTA (3)**

**Allen Ans. (3)**

69. Given below are two reactions, involved in the commercial production of dihydrogen ( $H_2$ ).

The two reactions are carried out at temperature " $T_1$ " and " $T_2$ " respectively



The temperature  $T_1$  and  $T_2$  are correctly related as

- (1)  $T_1 > T_2$
- (2)  $T_1 = T_2$
- (3)  $T_1 = 100\text{ K}, T_2 = 1270\text{ K}$
- (4)  $T_1 < T_2$

**Official Ans. by NTA (1)**

**Allen Ans. (1)**

70. Which of the following statements are correct?

- (A) The  $M^{3+}/M^{2+}$  reduction potential for iron is greater than manganese
- (B) The higher oxidation states of first row d-block elements get stabilized by oxide ion.
- (C) Aqueous solution of  $Cr^{2+}$  can liberate hydrogen from dilute acid.
- (D) Magnetic moment of  $V^{2+}$  is observed between 4.4-5.2 BM

Choose the correct answer from the options given below:

- (1) (B), (C) only
- (2) (C), (D) only
- (3) (A), (B), (D) only
- (4) (A), (B) only

**Official Ans. by NTA (1)**

**Allen Ans. (1)**

71. Which of the following is used as a stabilizer during the concentration of sulphide ores?

- (1) Pine oils
- (2) Xanthates
- (3) Fatty acids
- (4) Cresols

**Official Ans. by NTA (4)**

**Allen Ans. (4)**

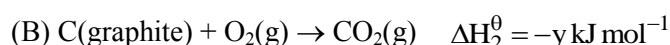
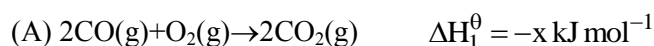
72. The octahedral diamagnetic low spin complex among the following is

- (1)  $[NiCl_4]^{2-}$
- (2)  $[CoCl_6]^{3-}$
- (3)  $[CoF_6]^{3-}$
- (4)  $[Co(NH_3)_6]^{3+}$

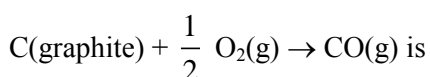
**Official Ans. by NTA (4)**

**Allen Ans. (4)**

73. Given



The  $\Delta H^\theta$  for the reaction



- (1)  $\frac{x-y}{2}$
- (2)  $\frac{x+2y}{2}$
- (3)  $\frac{2x-y}{2}$
- (4)  $2y-x$

**Official Ans. by NTA (1)**

**Allen Ans. (1)**

74. The compound which does not exist is

- (1)  $\text{NaO}_2$
- (2)  $(\text{NH}_4)_2\text{BeF}_4$
- (3)  $\text{BeH}_2$
- (4)  $\text{PbEt}_4$

**Official Ans. by NTA (1)**

**Allen Ans. (1)**

75. Match List I with List II

List-I	List-II
Polymer	Type/Class
(A) Nylon-2-Nylon-6	(I) Thermosetting Polymer
(B) Buna-N	(II) Biodegradable polymer
(C) Urea-formaldehyde resin	(III) Synthetic rubber
(D) Dacron	(IV) Polyester

Choose the correct answer from the options given below:

- (1) (A)-(IV), (B)-(I), (C)-(III), (D)-(II)
- (2) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)
- (3) (A)-(II), (B)-(I), (C)-(IV), (D)-(III)
- (4) (A)-(II), (B)-(III), (C)-(I), (D)-(IV)

**Official Ans. by NTA (4)**

**Allen Ans. (4)**

76. The number of molecules and moles in 2.8375 litres of  $\text{O}_2$  at STP are respectively

- (1)  $7.527 \times 10^{22}$  and 0.250 mol
- (2)  $1.505 \times 10^{23}$  and 0.250 mol
- (3)  $7.527 \times 10^{23}$  and 0.125 mol
- (4)  $7.527 \times 10^{22}$  and 0.125 mol

**Official Ans. by NTA (4)**

**Allen Ans. (4)**

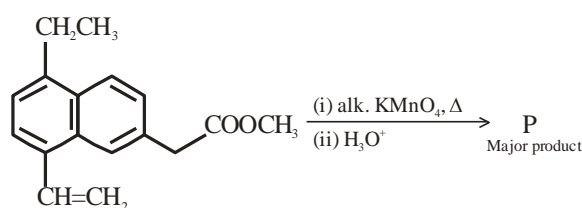
77. The enthalpy change for the adsorption process and micelle formation respectively are

- (1)  $\Delta H_{\text{ads}} < 0$  and  $\Delta H_{\text{mic}} > 0$
- (2)  $\Delta H_{\text{ads}} < 0$  and  $\Delta H_{\text{mic}} < 0$
- (3)  $\Delta H_{\text{ads}} > 0$  and  $\Delta H_{\text{mic}} < 0$
- (4)  $\Delta H_{\text{ads}} > 0$  and  $\Delta H_{\text{mic}} > 0$

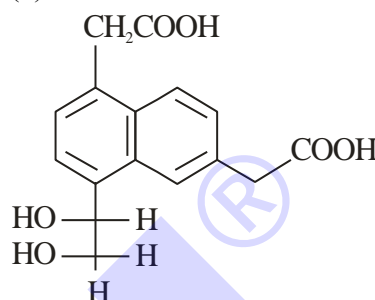
**Official Ans. by NTA (1)**

**Allen Ans. (1)**

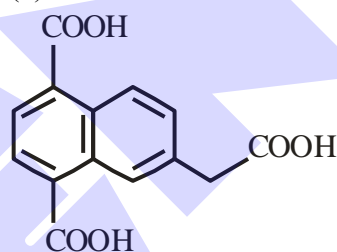
78. The major product 'P' formed in the given reaction is



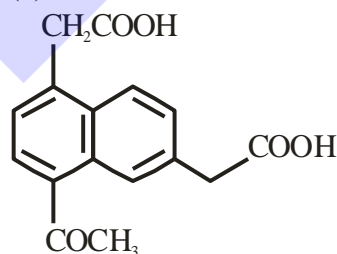
(1)



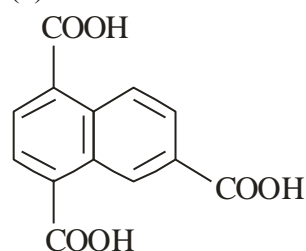
(2)



(3)



(4)



**Official Ans. by NTA (4)**

**Allen Ans. (4)**

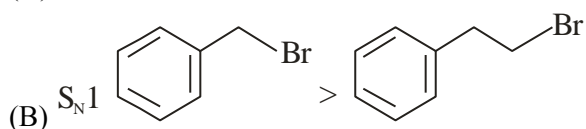
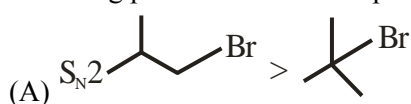
79. Suitable reaction condition for preparation of Methyl phenyl ether is

- (1)  $\text{Ph}-\text{Br}$ ,  $\text{MeO}^-\text{Na}^+$
- (2)  $\text{PhO}^-\text{Na}^+$ ,  $\text{MeOH}$
- (3)  $\text{PhO}^-\text{Na}^+$ ,  $\text{MeBr}$
- (4) Benzene,  $\text{MeBr}$

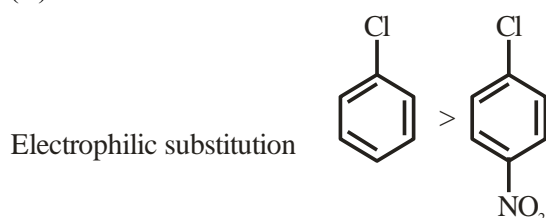
**Official Ans. by NTA (3)**

**Allen Ans. (3)**

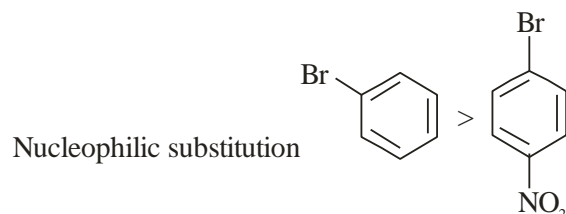
80. Identify the correct order of reactivity for the following pairs towards the respectively



(C)



(D)



- (1) (A), (B) and (D) only  
 (2) (A), (B) (C) and (D)  
 (3) (A), (C) and (D) only  
 (4) (B), (C) and (D) only

Choose the correct answer from the options given below:

**Official Ans. by NTA (2)**

**Allen Ans. (2)**

### SECTION-B

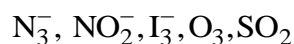
81. The number of correct statement/s involving equilibria in physical processes from the following is

- (A) Equilibrium is possible only in a closed system at a given temperature  
 (B) Both the opposing processes occur at the same rate.  
 (C) When equilibrium is attained at a given temperature, the value of all its parameters became equal  
 (D) For dissolution of solids in liquids, the solubility is constant at a given temperature

**Official Ans. by NTA (3)**

**Allen Ans. (3)**

82. The number of bent-shaped molecule/s from the following is \_\_\_\_\_



**Official Ans. by NTA (3)**

**Allen Ans. (3)**

83. A molecule undergoes two independent first order reactions whose respective half lives are 12 min and 3 min. If both the reactions are occurring then the time taken for the 50% consumption of the reactant is \_\_\_\_\_ min. (Nearest integer)

**Official Ans. by NTA (2)**

**Allen Ans. (2)**

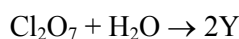
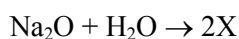
84. The number of incorrect statement/s about the black body from the following is \_\_\_\_\_

- (A) Emit or absorb energy in the form of electromagnetic radiation  
 (B) Frequency distribution of the emitted radiation depends on temperature  
 (C) At a given temperature, intensity vs frequency curve passes through a maximum value  
 (D) The maximum of the intensity vs frequency curve is at a higher frequency at higher temperature compared to that at lower temperature

**Official Ans. by NTA (0)**

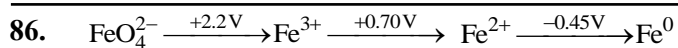
**Allen Ans. (0)**

85. In the following reactions, the total number of oxygen atoms in X and Y is \_\_\_\_\_



**Official Ans. by NTA (5)**

**Allen Ans. (5)**



$E^\theta_{\text{FeO}_4^{2-}/\text{Fe}^{2+}}$  is  $x \times 10^{-3}$  V. The value of x is \_\_\_\_\_

**Official Ans. by NTA (1825)**

**Allen Ans. (1825)**

87. If the degree of dissociation of aqueous solution of weak monobasic acid is determined to be 0.3, then the observed freezing point will be \_\_\_\_\_ % higher than the expected/theoretical freezing point. (Nearest integer)

**Official Ans. by NTA (30)**

**Allen Ans. (30)**

88. In potassium ferrocyanide, there are \_\_\_\_\_ pairs of electrons in the  $t_{2g}$  set of orbitals

**Official Ans. by NTA (3)**

**Allen Ans. (3)**

89. At constant temperature a gas is at a pressure of 940.3 mm Hg. The pressure at which its volume decreases by 40% is \_\_\_\_\_ mm Hg. (Nearest Integer)

**Official Ans. by NTA (1567)**

**Allen Ans. (1567)**

90. The sum of lone pairs present on the central atom of the interhalogen  $\text{IF}_5$  and  $\text{IF}_7$  is \_\_\_\_\_

**Official Ans. by NTA (1)**

**Allen Ans. (1)**





# SCALE UP YOUR **SCORE!**

with **ALLEN SCORE** TEST PAPERS



Total 10 Full  
syllabus papers



Paper Analysis of  
JEE Advanced '22

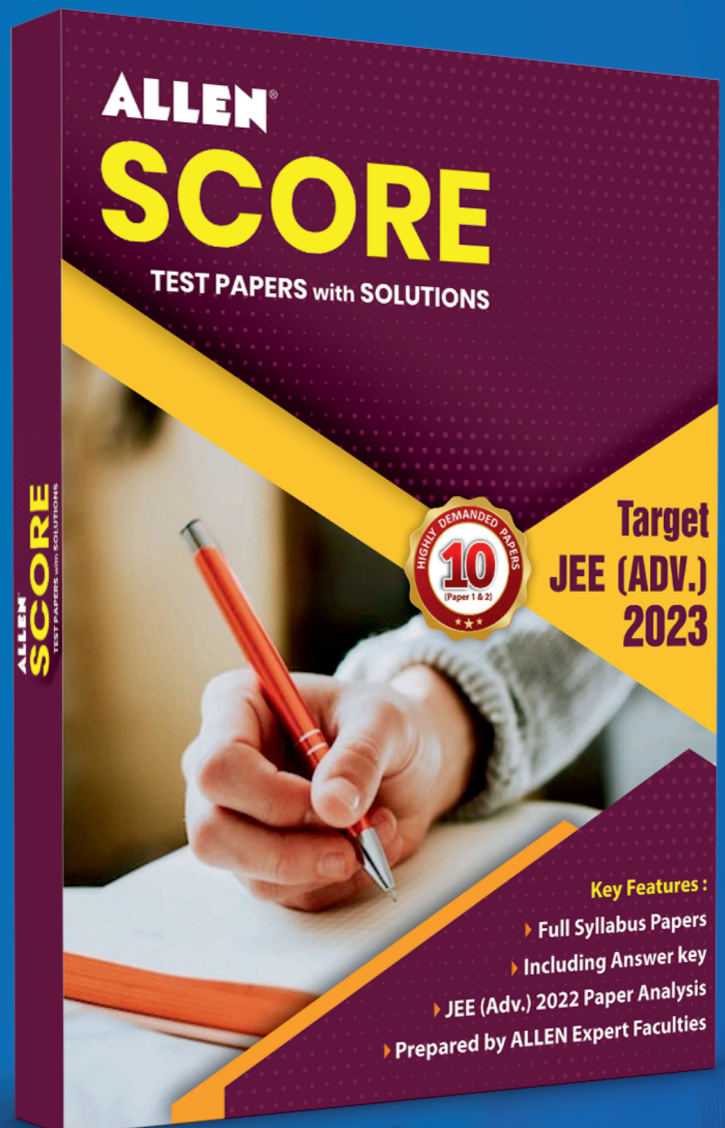


By **ALLEN**  
Subject Experts



Answer key  
with Solutions

Scan **QR** to Buy



[myallen.in/allenbooks](https://myallen.in/allenbooks)