JEE Main April 2025

Question Paper With Text Solution

07 April | Shift-1

CHEMISTRY

MATRIX

JEE Main & Advanced | XI-XII Foundation| VI-X Pre-Foundation

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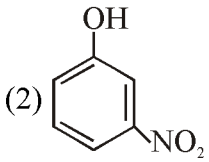
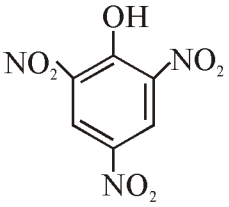
JEE MAIN APRIL 2025 | 07 APRIL SHIFT-1

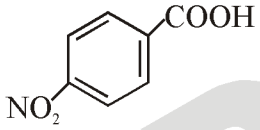
SECTION – A

51. Which of the following compounds is least likely to give effervescence of CO_2 in presence of aq. $NaHCO_3$?

(1) $Ph - \overset{(+)}{N}H_3\ \overset{(-)}{Cl}$

(2) 

(3) 

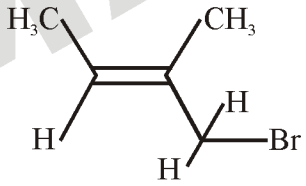
(4) 

Question ID : 3475772153

Ans. Official answer NTA (2)

Sol.

52. Which of the following is the correct IUPAC name of given organic compound (X)?



(1) 3-Bromo-3-methylprop-2-ene

(2) 2-Bromo-2-methylbut-2-ene

(3) 4-Bromo-3-methylbut-2-ene

(4) 1-Bromo-2-methylbut-2-ene

Question ID : 3475772150

Ans. Official answer NTA (4)

Sol.

53. An aqueous solution of HCl with pH 1.0 is diluted by adding equal volume of water (ignoring dissociation of water). The pH of HCl solution would

(Given log 2 = 0.30)

(1) increase to 2

(2) increase to 1.3

(3) reduce to 0.5

(4) remain same

Question ID : 3475772139

Ans. Official answer NTA (2)

Sol.

54. Given below are two statements:

Statement I: Ozonolysis followed by treatment with Zn, H_2O of cis-2-butene gives ethanal.

Statement II: The product obtained by ozonolysis followed by treatment with Zn, H_2O of 3, 6-dimethyloct-4-ene has no chiral carbon atom.

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) Statement I is false but Statement II are true

(4) Statement I is true but Statement II is false

Question ID : 3475772152

Ans. Official answer NTA (4)

Sol.

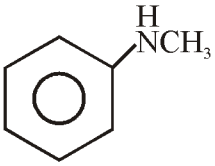
55. Which of the following amine (s) show (s) positive carbylamine test?

A. 

B. $(CH_3)_2NH$

C. CH_3NH_2

D. $(CH_3)_3N$

E. 

Choose the correct answer from the options given below:

(1) C Only

(2) B, C and D Only

(3) A and E Only

(4) A and C Only

Question ID : 3475772154

Ans. Official answer NTA (4)

Sol.

56. The first transition series metal 'M' has the highest enthalpy of atomisation in its series. One of its aquated ion $\left(M^{n+}\right)$ exists in green colour. The nature of the oxide formed by the above M^{n+} ion is:

(1) basic (2) neutral (3) acidic (4) amphoteric

Question ID : 3475772146

Ans. Official answer NTA (1)

Sol.

57. Given below are two statements:

Statement I: Dimethyl ether is completely soluble in water. However, diethyl ether is soluble in water to a very small extent.

Statement II: Sodium metal can be used to dry diethyl ether and not ethyl alcohol."In the light of given 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) Statement I is true but Statement II is false

(4) Statement I is false but Statement II are true

Question ID : 3475772149

Ans. Official answer NTA (1)

Sol.

58. Q. 58 Given below are two statements:

Statement I: D-(+)-glucose + D-(+) fructose $\xrightarrow{-H_2O}$ Sucrose

sucrose $\xrightarrow{\text{hydrolysis}}$ D – (+)glucose + D – (+) fructose

Statement II: Invert sugar is formed during sucrose hydrolysis

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

(1) Both Statement I and Statement II are False

(2) Statement I is true but Statement II is false

(3) Both Statement I and Statement II are true

(4) Statement I is false but Statement II are true

Question ID : 3475772155

Ans. Official answer NTA (4)

Sol.

59. Match the LIST-I with LIST-I

LIST-I Molecule /ion	LIST-II Bond pair : lone pair (on the central atom)
A. ICl_2^-	I. 4: 2
B. H_2O	II. 4: 1
C SO_2	III. 2: 3
D. XeF_4	IV. 2: 2

Choose the correct answer from the options given below:

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

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

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

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

Question ID : 3475772143

Ans. Official answer NTA (2)

Sol.

60. When a salt is treated with sodium hydroxide solution it gives gas X . On passing gas X through reagent Y a brown coloured precipitate is formed. X and Y respectively, are

(1) $X = NH_3$ and $Y = K_2HgI_4 + KOH$

(2) $X = HCl$ and $Y = NH_4Cl$

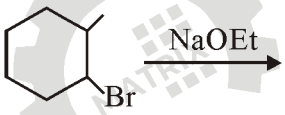
(3) $X = NH_4Cl$ and $Y = KOH$

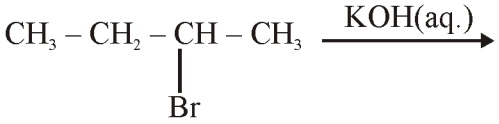
(4) $X = NH_3$ and $Y = HgO$

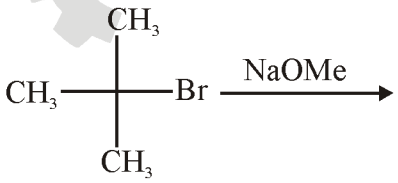
Question ID : 3475772148

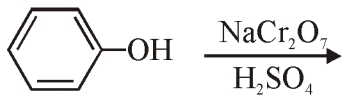
Ans. Official answer NTA (1)

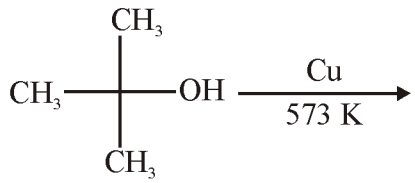
61. The reactions which cannot be applied to prepare an alkene by elimination, are

A. 

B. 

C. 

D. 

E. 

Choose the correct answer from the options given below:

(1) B & E Only (2) B, C & D Only (3) B & D Only (4) A, C & D Only

Question ID : 3475772151

Ans. Official answer NTA (3)

Sol.

62. An octahedral complex having molecular composition $Co.5NH_3 \cdot Cl^2 \cdot SO_4$ has two isomers A and B . The solution of A gives a white precipitate with $AgNO_3$ solution and the solution of B gives white precipitate with $BaCl_2$ solution. The type of isomerism exhibited by the complex is,

(1) Linkage isomerism

(2) Co-ordinate isomerism

(3) Geometrical isomerism

(4) Ionisation isomerism"

Question ID : 3475772147

Ans. Official answer NTA (4)

Sol.

63. Total enthalpy change for freezing of 1 mol of water at $10^{\circ}C$ to ice at $-10^{\circ}C$ is _____

(Given: $\Delta_{fus} H = x\ kJ/mol$

$C_p[H_2O(l)] = y\ J\ mol^{-1}\ K^{-1}$

$C_p[H_2O(s)] = z\ J\ mol^{-1}\ K^{-1}$

(1) $-x-10y-10z$

(2) $10(100x+y+z)$

(3) $-10(100x+y+z)$

(4) $x-10y-10z$

Question ID : 3475772138

Ans. Official answer NTA (3)

Sol.

64. Given below are two statements:

Statement I: Mohr's salt is composed of only three types of ions-ferrous, ammonium and sulfate.

Statement II: If the molar conductance at infinite dilution for ferrous, ammonium and sulfate ions are x_1, x_2 and x_3 $S\,cm^2\,mol^{-1}$, respectively then the molar conductance for Mohr's salt solution at infinite dilution would be given by $x_1 + x_2 + 2x_3$

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

(1) Both Statements I and Statement II are true

(2) Statement I is true but Statement II are false

(3) Statement I is false but Statement II is true

(4) Both Statements I and Statement II are false

Question ID : 3475772140

Ans. Official answer NTA (2)

Sol.

65. Reaction $A(g) \rightarrow 2B(g) + C(g)$ is a first order reaction. It was started with pure A

t/min	Pressure of system at time t/mm Hg
10	160
∞	240

Which of the following option is incorrect?

(1) Initial pressure of A is 80 mm Hg

(2) Partial pressure of A after 10 minute is 40 mm Hg

(3) The reaction never goes to completion

(4) Rate constant of the reaction is $1.693\,min^{-1}$

Question ID : 3475772141

Ans. Official answer NTA (4)

Sol.

66. At the sea level, the dry air mass percentage composition is given as nitrogen gas: 70.0, oxygen gas: 27.0 and argon gas: 3.0 . If total pressure is 1.15 atm , then calculate the ratio of following respectively:

(i) partial pressure of nitrogen gas to partial pressure of oxygen gas

(ii) partial pressure of oxygen gas to partial pressure of argon gas

(Given: Molar mass of N, O and Ar are 14, 16 and $40\,g\,mol^{-1}$ respectively.)

(1) 5.46, 17.8 (2) 2.96,11.2 (3) 4.26,19.3 (4) 2.59,11.85

Question ID : 3475772136

Ans. Official answer NTA (2)

Sol.

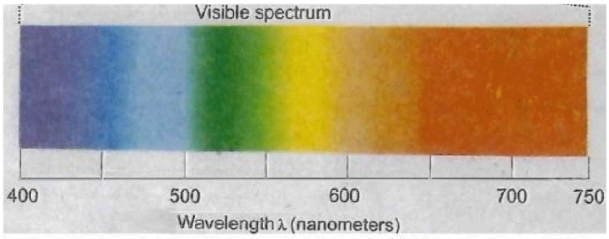
67. The number of valence electrons present in the metal among Cr, Co, Fe and Ni which has the lowest enthalpy of atomisation is

(1) 6 (2) 10 (3) 8 (4) 9

Question ID : 3475772144

Ans. Official answer NTA (1)

Sol.

68. 

Which of the following statements are correct, if the threshold frequency of caesium is 5.16×10^{14} Hz ?

A. When Cs is placed inside a vacuum chamber with an ammeter connected to it and yellow light is focused on Cs, the ammeter shows the presence of current.

B. When the brightness of the yellow light is dimmed, the value of the current in the ammeter is reduced.

C. When a red light is used instead of the yellow light, the current produced is higher with respect to the yellow light.

D. When a blue light is used, the ammeter shows the formation of current.

E. When a white light is used. the ammeter shows formation of current.

Choose the correct answer from the options given below:

(1) A, B, D and E Only

(2) A, C, D and E Only

(3) B, C and D Only

(4) A, D and E Only

Question ID : 3475772137

Ans. Official answer NTA (1)

Sol.

69. The group 14 elements A and B have the first ionisation enthalpy values of 708 and 715 $kJ\,mol^{-1}$ respectively. The above values are lowest among their group members. The nature of their ions A^{2+} and B^{4+} respectively is

(1) oxidising and reducing

(2) both oxidising

(3) both reducing

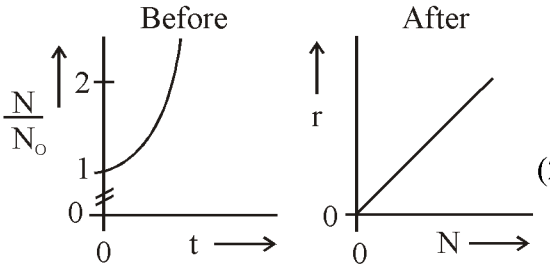
(4) reducing and oxidising

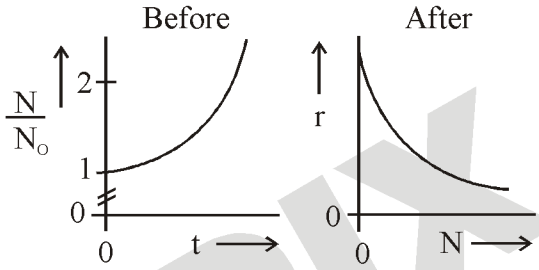
Question ID : 3475772145

Ans. Official answer NTA (4)

Sol.

70. A person's wound was exposed to some bacteria and then bacterial growth started to happen at the same place. The wound was later treated with some antibacterial medicine and the rate of bacterial decay(r) was found to be proportional with the square of the existing number of bacteria at any instance. Which of the following set of graphs correctly represents the 'before' and 'after' situation of the application of the medicine?
[Given: N = No. of bacteria, t= time, bacterial growth follows 1st order kinetics.]

(1)


(2)


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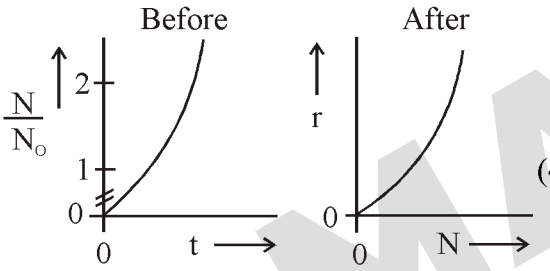

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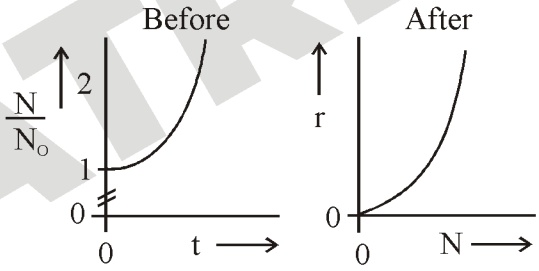


Question ID : 3475772142

Ans. Official answer NTA (4)

Sol.

SECTION – B

71. The percentage dissociation of a salt (MX_3) solution at given temperature (van't Hoff factor i =2) is

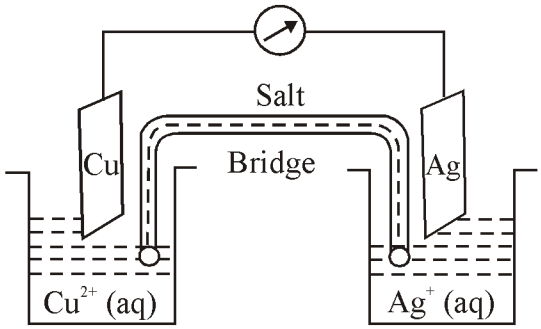
_____ (Nearest integer)

Question ID : 3475772157

Ans. Official answer NTA (33)

Sol.

72. 1 Faraday electricity was passed through $Cu^{2+}(1.5M,1L)/Cu$ and 0.1 Faraday was passed through $Ag^{+}(0.2M,1L)/Ag$ electrolytic cells. After this the two cells were connected as shown below to make an electrochemical cell. The emf of the cell thus formed at 298 K is _____ mV (nearest integer)



Given : $E^{\circ}_{Cu^{2+}/Cu} = 0.34V$

$E^{\circ}_{Ag^{+}/Ag} = 0.8V$

$\frac{2.303RT}{F} = 0.06V$

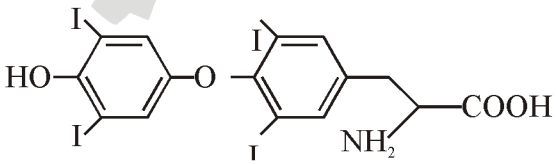
Question ID : 3475772156

Ans. **Official answer NTA (400)**

Answer by Matrix is (457)

Sol.

73. Thyroxine, the hormone has given below



The percentage of iodine in thyroxine is _____ %. (nearest integer)

(Given molar mass in $gmol^{-1}$ C : 12, H : 1, O : 16, N : 14, I : 127)

Question ID : 3475772160

Ans. Official answer NTA (65)

Sol.

74. An organic compound weighing 500 mg , produced 220 mg of CO_2, on complete combustion. The percentage composition of carbon in the compound is _____%. (nearest integer)

(Given molar mass in $gmol^{-1}$ of C : 12, O : 16)

Question ID : 3475772159

Ans. Official answer NTA (12)

Sol.

75. The number of paramagnetic complexes among

$[FeF_6]^{3-}$, $[Fe(CN)_6]^{3-}$, $[Mn(CN)_6]^{3-}$, $\left[Co\left(C_2O_4\right)_3\right]^{3-}$, $[MnCl_6]^{3-}$, and $[CoF_6]^{3-}$,

which involved d^2sp^3 hybridization is _____.

Question ID : 3475772158

Ans. Official answer NTA (2)

Sol.