JEE Main January 2026

Question Paper With Text Solution

28 January | Shift-1

CHEMISTRY

MATRIX

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

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JEE MAIN JANUARY 2026 | 28 JANUARY SHIFT-1

SECTION – A

Question ID : 444792734

51. Regarding the hydrides of group 15 elements EH_3 (E = N, P, As, Sb), select the correct statement from the following:

A. The stability of hydrides decreases down the group.

B. The basicity of hydrides decreases down the group.

C. The reducing character increases down the group.

D. The boiling point increases down the group.

Choose the correct answer from the options given below:

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

Ans. Official answer NTA (2)

Sol.

Question ID : 444792732

52. An organic compound undergoes first order decomposition. The time taken for decomposition to $\left(\frac{1}{8}\right)^{th}$ and $\left(\frac{1}{10}\right)^{th}$ of its initial concentration are $t_{1/8}$ and $t_{1/10}$ respectively.

What is the value of $\frac{t_{1/8}}{t_{1/10}} \times 10$? (log 2 = 0.3)

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(1) 3 (2) 30 (3) 0.9 (4) 9

Ans. Official answer NTA (4)

Sol.

Question ID : 444792731

53. Consider a weak base ' B ' of $pK_b = 5.699$. 'x' mL of 0.02 M HCl and 'y' mL of 0.02 M weak base 'B' are mixed to make 100 mL of a buffer of pH 9 at 25°C. The values of 'x' and 'y' respectively are:

[Given: log 2 = 0.3010, log 3 = 0.4771, log 5 = 0.699

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(1)

x	y
11.1	88.9

(2)

x	y
14.3	85.7

(3)

x	y
85.7	14.3

(4)

x	y
42.7	57.3

Ans. Official answer NTA (2)

Sol.

Question ID : 444792741

54. Consider the following reaction sequence

Compound (x) [76.6% C, 6.38% H, vapour density 47] $\xrightarrow[\text{(ii) } H_3O^+]{\text{(i) } CO_2,\ NaOH,\ 120°C,\ \text{high pressure}}$ Compound (y) (Major Product)

Compound (y) develops characteristic colour with neutral $FeCl_3$ solution.

Identify the INCORRECT statement from the following for the above sequence.

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(1) Both compounds x and y will dissolve in NaOH .

(2) Both compounds x and y will burn with sooty flame.

(3) Compound y will dissolve in $NaHCO_3$ and evolve a gas.

(4) Compound x is more acidic than compound y .

Ans. Official answer NTA (4)

Sol.

Question ID : 444792743

55. Consider the following reactions giving major product. Identify the correct reaction.

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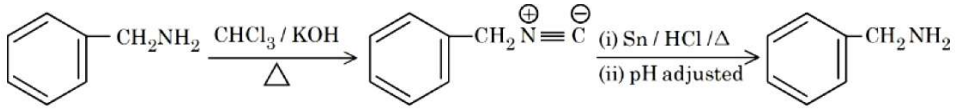
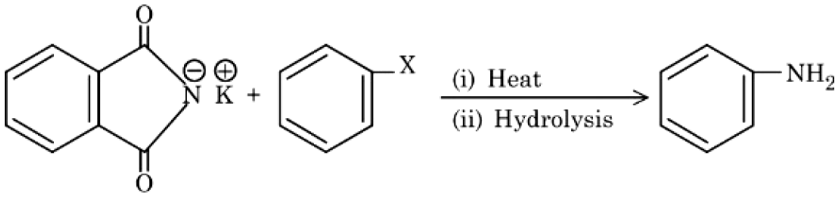
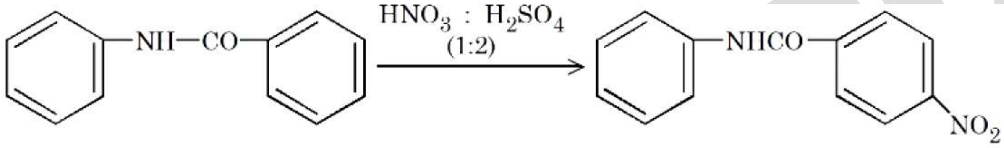
(1) 

(2) $H_3CCH_2-\overset{O}{\overset{\|}{C}}-NH_2 + Br_2 + 4\,KOH\,(alc) \xrightarrow{\Delta} H_3CCH_2NH_2 + 2KBr + K_2CO_3 + 2H_2O$

(3) 

(4) 

Ans. Official answer NTA (2)

Sol.

Question ID : 444792726

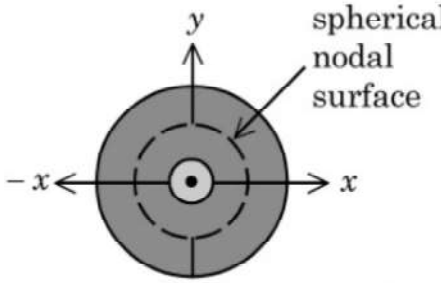
56. 

Figure 1. electron probability density for 2s orbital

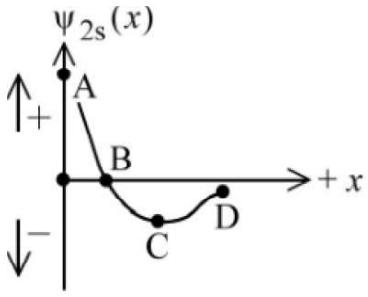


Figure 2. wave function for 2s orbital

Which of the following point in Figure 2 most accurately represents the nodal surface as shown in Figure 1?

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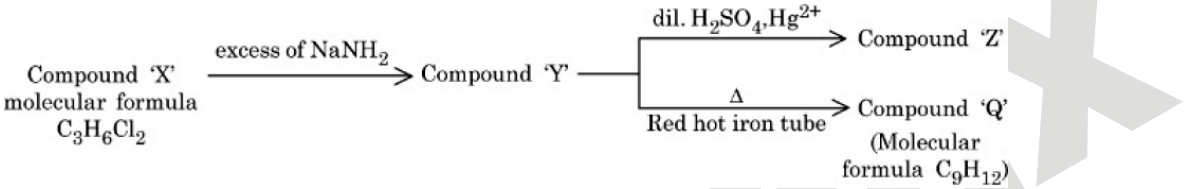
(1) A (2) D (3) C (4) B

Ans. Official answer NTA (1)

Sol.

Question ID : 444792740

57. Given below are two statements for the following reaction sequence.



Statement I: Compound 'Z' will give yellow precipitate with NaOI .

Statement II: Compound 'Q' has two different types of 'H' atoms (aromatic : aliphatic) in the ratio 1: 3.

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

क

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

Ans. Official answer NTA (2)

Sol.

Question ID : 444792728

58. Given below are two statements:

Statement I: The number of species among BF_4^-, SiF_4, XeF_4 and SF_4, that have unequal E – F bond lengths is two. Here, E is the central atom.

Statement II: Among O_2^-, O_2^{2-}, F_2 and O_2^+, O_2^- has the highest bond order.

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

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(1) Both Statement I and Statement II are false

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

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

(4) Both Statement I and Statement II are true

Ans. Official answer NTA (1)

Sol.

Question ID : 444792730

59. At T(K), 2 moles of liquid A and 3 moles of liquid B are mixed. The vapour pressure of ideal solution formed is 320 mm Hg . At this stage, one mole of A and one mole of B are added to the solution. The vapour pressure is now measured as 328.6 mm Hg . The vapour pressure (in mm Hg) of A and B are respectively:

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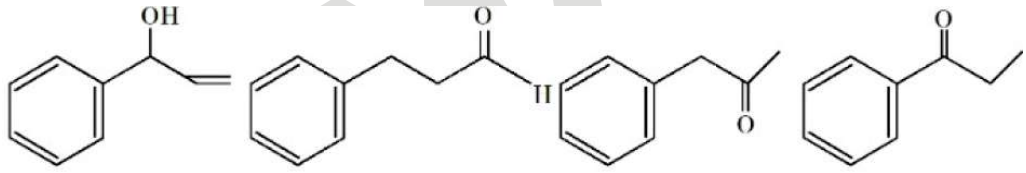
(1) 300,200 (2) 400,300 (3) 600,400 (4) 500,200

Ans. Official answer NTA (4)

Sol.

Question ID : 444792742

60. iven below are the four isomeric compounds (P, Q, R, S)



(P) (Q) (R) (S)

Identify correct statements from below.

A. Q, R and S will give precipitate with 2, 4-DNP.

B. P and Q will give positive Bayer's test.

C. Q and R will give sooty flame.

D. R and S will give yellow precipitate with I_2/NaOH.

E. Q alone will deposit silver with Tollen's reagent

Choose the correct option.

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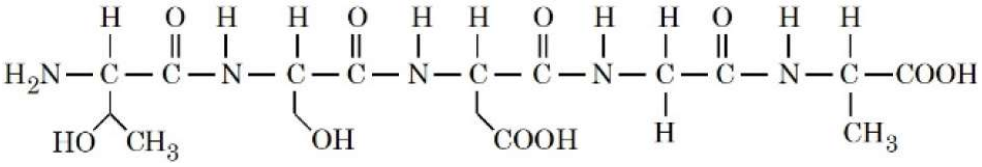
(1) A, C and E only (2) C and E only (3) A and E only (4) A, B, D and E only

Ans. Official answer NTA (1)

Sol.

Question ID : 444792744

61. In the given pentapeptide, find out an essential amino acid (Y) and the sequence present in the pentapeptide:



Choose the correct answer from the options given below:

क

(1)

(Y)	(Sequence)
Threonine	Thr-Ser-Asp-Gly-Ala

(2)

(Y)	(Sequence)
Serine	Thr-Ser-Asp-Ala-Gly

(3)

(Y)	(Sequence)
Threonine	Ser-Thr-Asp-Gly-Ala

(4)

(Y)	(Sequence)
Serine	Ser-Asp-Thr-Ala-Gly

Ans. Official answer NTA (1)

Sol.

Question ID : 444792736

62. Given below are two statements:

Statement I: The number of pairs, from the following, in which both the ions are coloured in aqueous solution is 3 .

$\left[Sc^{3+}, Ti^{3+}\right], \left[Mn^{2+}, Cr^{2+}\right], \left[Cu^{2+}, Zn^{2+}\right]$ and $\left[Ni^{2+}, Ti^{4+}\right]$

Statement II: Th^{4+} is the strongest reducing agent among $Th^{4+}, Ce^{4+}, Gd^{3+}$ and Eu^{2+}

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

क

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

(2) Both Statement I and Statement II are false

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

(4) Both Statement I and Statement II are true

Ans. Official answer NTA (2)

Sol.

Question ID : 444792739

63. $\mathrm{Ph-CH=CH_2} \xrightarrow[\mathrm{HBr}]{(\mathrm{PhCOO})_2} \text{Product}$

Consider the above reaction

A. The reaction proceeds through a more stable radical intermediate.

B. The role of peroxide is to generate $\mathrm{H^{\cdot}}$ (Hydrogen radical).

C. During this reaction, benzene is formed as a byproduct.

D. 1-Bromo-2-phenylethane is formed as the minor product.

E. The same reaction in absence of peroxide proceeds via carbocation intermediate.

Identify the correct statements. Choose the correct answer from the options given below:

क

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

Ans. Official answer NTA (2)

Sol.

Question ID : 444792738

64. CORRECT order of stability for the following is

$CH_2=CH^-, CH_3-CH_2^-, CH\equiv C^-$

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(1) $CH_2=CH^- > CH\equiv C^- > CH_3-CH_2^-$

(2) $CH\equiv C^- > CH_2=CH^- > CH_3-CH_2^-$

(3) $CH_3-CH_2^- > CH_2=CH^- > CH\equiv C^-$

(4) $CH\equiv C^- > CH_3-CH_2^- > CH_2=CH^-$

Ans. Official answer NTA (2)

Sol.

Question ID : 444792733

65. In period 4 of the periodic table, the elements with highest and lowest atomic radii are respectively.

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(1) K & Br (2) Na & Cl (3) K & Se (4) Rb & Br

Ans. Official answer NTA (1)

Sol.

Question ID : 444792729

66. $6620.0 dm^3$ of an ideal gas ' X ' at 600 K and 0.5 MPa undergoes isothermal reversible expansion until pressure of the gas is 0.2 MPa . Which of the following option is correct?

(Given : $\log 2 = 0.3010$ and $\log 5 = 0.6989$)

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(1) $w = 9.1J, \Delta U = 9.1J, \Delta H = 0; q = 0$

(2) $w = +4.1kJ, \Delta U = 0, \Delta H = 0; q = -4.1kJ$

(3) $w = -3.9kJ, \Delta U = 0, \Delta H = 0; q = 3.9kJ$

(4) $w = -9.1kJ, \Delta U = 0, \Delta H = 0, q = 9.1kJ$

Ans. Official answer NTA (4)

Sol.

Question ID : 444792745

67. Given below are two statements:

Statement I: Griss-Ilosvay test is used for the detection of nitrite ion, which involves the use of sulphanilic acid and α-naphthylamine reagent.

Statement II: In the above test, sulphanilic acid is diazotized by the acidified nitrite ion, which on further coupling with α-naphthylamine forms an azo-dye.

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

क

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

(2) Both Statement I and Statement II are false

(3) Both Statement I and Statement II are true

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

Ans. Official answer NTA (3)

Sol.

Question ID : 444792735

68. The correct statement among the following is:

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(1) $Ni(CO)_4$ is diamagnetic and $[NiCl_4]^{2-}$ and $[Ni(CN)_4]^{2-}$ are paramagnetic.

(2) $Ni(CO)_4$ and $[NiCl_4]^{2-}$ are diamagnetic and $[Ni(CN)_4]^{2-}$ is paramagnetic.

(3) $Ni(CO)_4$ and $[Ni(CN)_4]^{2-}$ are diamagnetic and $[NiCl_4]^{2-}$ is paramagnetic.

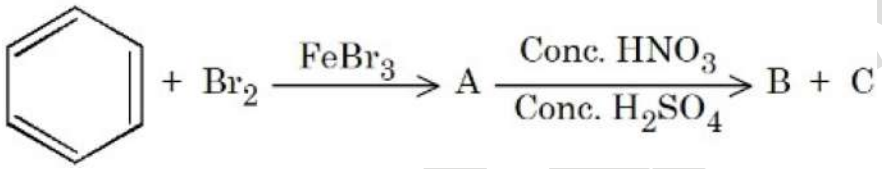
(4) $[Ni(CN)_4]^{2-}$ and $[NiCl_4]^{2-}$ are diamagnetic and $Ni(CO)_4$ is paramagnetic.

Ans. Official answer NTA (3)

Sol.

Question ID : 444792737

69. Method used for separation of mixture of products (B and C) obtained in the following reaction is



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(1) steam distillation
(2) fractional distillation
(3) simple distillation
(4) sublimation

Ans. Official answer NTA (2)

Sol.

Question ID : 444792727

70. The wave numbers of three spectral lines of H atom are considered. Identify the set of spectral lines belonging to Balmer series.

(R = Rydberg constant)

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(1) $\frac{5R}{36}, \frac{3R}{16}, \frac{21R}{100}$ (2) $\frac{7R}{144}, \frac{3R}{16}, \frac{16R}{255}$ (3) $\frac{3R}{4}, \frac{3R}{16}, \frac{7R}{144}$ (4) $\frac{5R}{36}, \frac{8R}{9}, \frac{15R}{16}$

Ans. Official answer NTA (1)

Sol.

SECTION – B

Question ID : 444792747

71. 0.53 g of an organic compound (x) when heated with excess of nitric acid (concentrated) and then with silver nitrate gave 0.75 g of silver bromide precipitate. 1.0 g of (x) gave 1.32 g of CO_2 gas on combustion. The percentage of hydrogen in the compound (x) is ____%. [Nearest Integer]

[Given: Molar mass in $gmol^{-1}$ $H:1, C:12, Br:80, Ag:108, O:16$; Compound(x) : $C_xH_yBr_z$]

क

Ans. Official answer NTA (4)

Sol.

Question ID : 444792750

72. Consider the dissociation equilibrium of the following weak acid

$HA \rightleftharpoons H^+(aq) + A^-(aq)$

If the pKa of the acid is 4 , then the pH of 10 mM HA solution is _____.(Nearest integer)

[Given: The degree of dissociation can be neglected with respect to unity]

क

Ans. Official answer NTA (3)

Sol.

Question ID : 444792746

73. X is the number of geometrical isomers exhibited by $\left[Pt(NH_3)(H_2O)BrCl\right]$.

Y is the number of optically inactive isomer(s) exhibited by $\left[CrCl_2(ox)_2\right]^{3-}$

Z is the number of geometrical isomers exhibited by $\left[Co(NH_3)_3(NO_2)_3\right]$.

The value of X + Y + Z is _____.

क

Ans. Official answer NTA (6)

Sol.

Question ID : 444792749

74. Consider the following redox reaction taking place in acidic medium

$$BH_4^-(aq) + ClO_3^-(aq) \rightarrow H_2BO_3^-(aq) + Cl^-(aq)$$

If the Nernst equation for the above balanced reaction is

$$E_{cell} = E^\circ_{cell} - \frac{RT}{nF}\ln Q,$$

then the value of n is _____ .(Nearest integer)

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Ans. Official answer NTA (24)

Sol.

Question ID : 444792748

75. 500 mL of 1.2 M KI solution is mixed with 500 mL of 0.2 M $KMnO_4$ solution in basic medium. The liberated iodine was titrated with standard $0.1M Na_2S_2O_3$ solution in the presence of starch indicator till the blue color disappeared. The volume (in L) of $Na_2S_2O_3$ consumed is _____. (Nearest integer)

क

Ans. Official answer NTA (3)

Sol.