CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA NEET SET 93

Chemistry

1. if the electron in hydrogen orbit jumps form third orbit to second orbit, the wavelength of the emitted radiation is given by

A. $\lambda = \frac{36}{5R}$

B. $\lambda = \frac{5R}{36}$

C. $\lambda = \frac{5}{R}$

D. $\lambda = \frac{R}{6}$

Answer: A

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2. Which of the following statement is correct for NO_3^- ion ?

A. Sum of all formal charges = + 1

B. Formal charge on one of the oxygen atom = -2

C. Formal charge on nitrogen atom = +1

D. Average formal charge on oxygen atom $= -\frac{1}{3}$

Answer: C

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3. Which combination cannot be used for the preparation of hydrogen gas in the laboratory ?

I. Zinc/conc. H_2SO_4

II. Zinc/ HNO_3

III. Pure zinc/dil. H_2SO_4

A. I and II

B. I, II and III

C. III only

D. I and III

Answer: B

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4. The number of moles of oxygen in 1 L of air containing 21% oxygen by volume, in standard conditions, is

A. 0.186 mole

B. 2.10 mole

C. 0.210 mole

D. 0.0093 mole

Answer: D

5. Which of the following represents the correct order of covalent character among the iodides of alkali metals ?

A. LiI $>$ NaI $>$ KI $>$ RbI $>$ CsI

B. NaI $>$ RbI $>$ CaI $>$ LiI

C. LiI $>$ csI $>$ RbI $>$ NaI

D. CsI $>$ RbI $>$ KI $>$ NaI $>$ LiI

Answer: A

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6. Which among the following compounds will shows tautomerism

A. 2,2- dimethylpropanal

B. 2,2- demethyl -1- nitropropane

C. Acetyl actone

D. Benzophenone

Answer: C

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7. The dissolution of $Al(OH)_3$ by a solution of $NaOH$ results in the formation of

A. $\left[Al(H_2O)_4(OH)_2\right]^+$

B. $\left[Al(H_2O)_3(OH)_3\right]$

C. $\left[Al(H_2O)_2(OH)_4\right]^-$

D. $\left[Al(H_2O)_6(OH)_3\right]$

Answer: C

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8. Arrange given compounds in order of decreasing acidity

1. $CH_3 - NO_2$

2. $NO_2 - CH_2 - NO_2$

3. $CH_3 - CH_2 - NO_2$

4. $NO_2 - \underset{\underset{NO_2}{|}}{CH} - NO_2$

A. $4 > 2 > 1 > 3$

B. $4 > 2 > 3 > 1$

C. $3 > 1 > 2 > 4$

D. $3 > 1 > 4 > 2$

Answer: A

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9. During Hoope's process for eelctrolytic refining of Al, the middle layer is of

A. Pure Al

B. Impure Al

C. Cryolite $+ BaF_2$

D. Alloys of Al, Ca, Si

Answer: C

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10. The equivalent conductivity of $0.1M$ weak acid is 100 times less than that at infinite dilution. The degree of dissociation of weak electrolyte at $0.1M$ is.

A. 100

B. 10

C. 0.01

D. 0.001

Answer: C

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11. $B_2H_6 + NH_3 \rightarrow$ Addition compound $(X) \xrightarrow{450\ \mathrm{K}} Y + Z(g)$

in the above sequence Y and Z are respectively:

A. Borazine, H_2

B. Boron , H_2

C. Boron nitride , H_2

D. Boron , Hydrazine

Answer: A

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12. Arrange the melting points of following compounds in decreasing order

1. n - butane

2. cis - 2- butene

3. trans -2- butene

4. 1 - butyne

A. $1 > 2 > 3 > 4$

B. $4 > 2 > 3 > 1$

C. $4 > 3 > 2 > 1$

D. $3 > 2 > 1 > 4$

Answer: C

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13. HCN is a weak acid $\left(K_a = 6.2 \times 10^{-10}\right)$. NH_4 OH is a weak base $\left(K_b = 1.8 \times 10^{-5}\right)$. A 1 M solution of NH_4CN would be

A. strongly acidic

B. weakly acidic

C. neutral

D. weakly basic

Answer: D

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14. The equilibrium constant for the decomposition of water $H_2O(g) \Leftrightarrow H_2(g) + \frac{1}{2}O_2(g)$ is given by : (α =degree of dissociation of H_2O (g) p=Total equilibrium pressure)

A. $K = \frac{\alpha^3 p^{1/2}}{(1-\alpha)(2-\alpha)^{1/2}}$

B. $K = \frac{\alpha^{3/2} p^{1/2}}{(1-\alpha)(2+\alpha)^{1/2}}$

C. $K = \frac{\alpha^3 p^{1/2}}{\sqrt{2}}$

D. $K = \frac{\alpha^3 p^{1/2}}{(1-\alpha)(2+\alpha)^{1/2}}$

Answer: B

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15. A $50ml$ solution of $pH = 1$ is mixed with a $50ml$ solution of $pH = 2$. The pH of the mixture will be nearly

A. 0.76

B. 1.26

C. 1.76

D. 2.26

Answer: B

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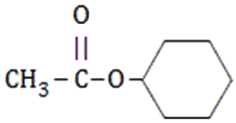
16. Which of the following is most reactive for hydrolysis ?

A. $CH_3 - \overset{\overset{O}{||}}{C} - O - CH_3$

B. $CH_3 - \overset{\overset{O}{||}}{C} - O - \underset{\underset{CH_3}{|}}{CH} - CH_3$

C. $CH_3 - \overset{\overset{O}{||}}{C} - O - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_3$

D. 

Answer: A

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17. The aqueous solution containing one mole of $CoCl_3.5NH_3$ consumed 2 mol of silver nitrate solution for precipitation of free chloride ions. The formula of the compound should be

A. $\left[Co(NH_3)_5Cl\right]Cl_2$

B. $\left[Co(NH_3)_6Cl\right]Cl_2$

C. $\left[Co(NH_3)_5Cl_2\right]Cl$

D. $\left[Co(NH_3)_5Cl_3\right]$

Answer: A

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18. Which alkene will give optically inactive product with Br_2 / CCl_4 ?

A. 1- butene

B. Propene

C. cis - 2 - butene

D. trans - 2 - butene

Answer: D

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19. The difference between the heats of reaction at constant pressure and a constant volume for the

reaction

$2C_6H_6(l) + 15O_2(g) \rightarrow 12CO_2(g) + 6H_2O(l)$ at $25^\circ C$ in kJ is

A. $+7.43$

B. -3.72

C. $+3.72$

D. -7.43

Answer: D

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20. When aluminium oxide (Al_2O_3) is electrolysed for the production of aluminium metal. For a given quantity of electricty, the number of moles of aluminium obtained if the volume of O_2 gas obtained is 201.6 litre measured at NTP, is

A. 3

B. 9

C. 12

D. 6

Answer: C

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21. Incorrect match for give complex compound/ion and its characteristics

A. $\left[CrBrCl(en)_2\right]Br$, Ionization and optical isomerism

B. $\left[CoBr_3(H_2O)_3\right]$, Fac - mer and hydrate isomerism

C. $\left[PtCl_2(NH_3)_4\right]\left[Co(SCN)_4\right]$, Linkage isomerism and paramagnetic character

D. $\left[Co(\mathrm{ox})_3\right]^{3-}$, Inner orbital complex and optical isomerism

Answer: B

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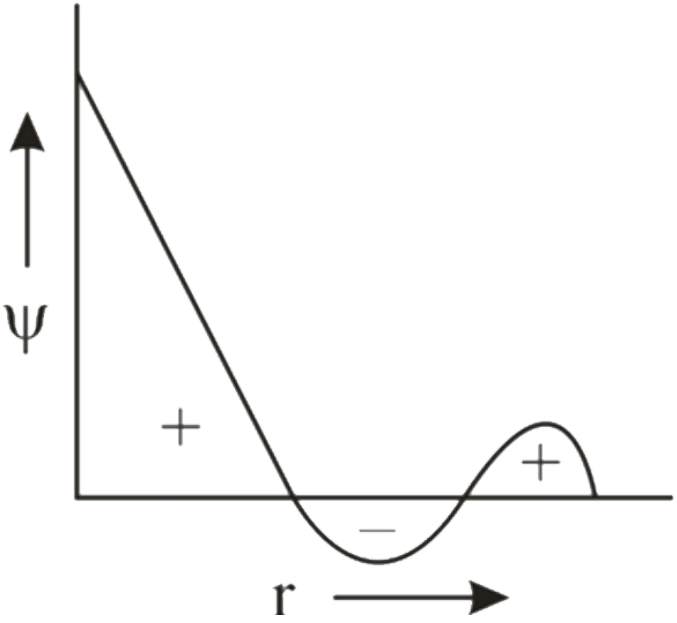
22. Wave function of an orbital is plotted against the distance from nucleus



The graphical representation is of

A. 3p

B. 2s

C. 2p

D. 3s

Answer: D

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23. When a large amount of $KMnO_4$ is added to concentrated , H_2SO_4 an explosive compound is. Formed . The formula of the compound is

A. Mn_2O_7

B. Mn_3O_4

C. MnO_3

D. MnO_3^+

Answer: A

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24. A binary solution contains x_1 and x_2 mile fraction of two components having vapour pressure p_1° and p_2° in this pure states. The total vapour pressure above the solution is

A. $(p_1^\circ - P_2^\circ)x_1 + P_2^\circ$

B. $(p_2^\circ - P_1^\circ)x_1 + P_2^\circ$

C. $(p_1^\circ - P_2^\circ)x_1 + P_1^\circ$

D. $\left(p_2^\circ - P_1^\circ\right)x_1 + P_1^\circ$

Answer: A

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25. In the reaction $CH_3 - CH_2 - OH \xrightarrow[(ii)\ LiAiH_4]{(i)\ TsCl} (X)$,

(X) will be

A. $CH_2 = CH_2$

B. $CH_3 - CH_2 - CH_2 - CH_3$

C. $CH_3 - CH_3$

D. $CH_3 - CH = CH - CH_3$

Answer: C

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26. Which of the following statement are correct ?

(1) α - amino acids present in protein are α - L amino acids

2. Amino acids present $-NH_2$ as well as - COOH group

3. Number of amino groups and crboxylic groups are always same in all α - amino acids

(4) Concentration of dipolar ion is maximum at isoeletric point

Select the correct answer from the codes given below

A. Only 1 and 2

B. 1,2 and 3

C. 1,2 and 4

D. 1,2,3 and 4

Answer: A

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27. Which of the following statement is wrong ?

A. Two sulphur atoms in the thiosulphate ions occupy equivalent positions

B. Ice results from cooling of water whereas snow results from cooling of vapours to solid

C. Formation of ice is solidification whereas formation of snow is Hoar frost

D. Ice sublimes on moon

Answer: A

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28. Salt used for performing bead test in qualitative inorganic analysis is

A. $Na(NH_4)HPO.4H_2O$

B. $K_2SO_4.\ Al_2(SO_4)_3.24H_2O$

C. $FeSO_4.\ (NH_4)SO_4.6H_2O$

D. $CaSO_4.2H_2O$

Answer: A

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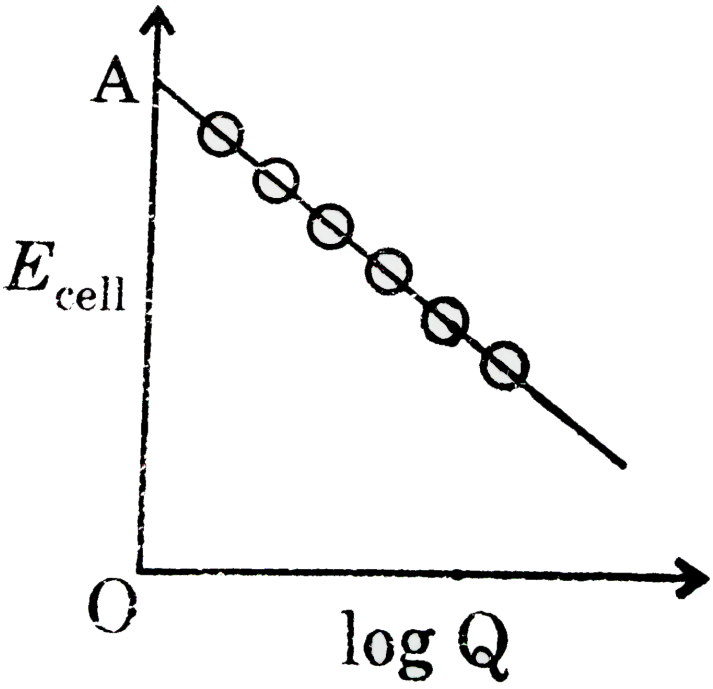
29. $Zn + Cu^{2+}(aq) \rightarrow Cu + Zn^{2+}(aq).$

Reaction quotient is $Q = \dfrac{[Zn^{2+}]}{[Cu^{2+}]} \cdot E^{\circ}_{cell} = 1.10V$ ltb

rgt E_{cell} will be 1.1591 V when :



A. Q = 0.01

B. Q = 100

C. Q = 0.1

D. Q = 1

Answer: A

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30. Which of the following anions is the weakest base ?

A. $C_2H_5O^-$

B. NO_3^-

C. F^-

D. CH_3COO^-

Answer: B

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31. The weight of ethyl alcohol which must be added to 1.0 L of water so that the solution will freeze at $14^{\circ} F$ is $\left(K_f \text{ of water} = 1.86 \text{ K kg } mol^{-1}\right)$

A. 263.11 g

B. 247.31 g

C. 236.11 g

D. 281.01 g

Answer: B

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32. Which one of the following nitroalkanes will give nitrolic acid with $NaNO_2 / conc.\ H_2SO_4$

A. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - NO_2$

B. $C_2H_5 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - NO_2$

C. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_2 - NO_2$

D. All of these

Answer: C

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33. The coagulation value in millimoles per litre of electrolytes used for the coagulation of As_2S_3 are as below

I. NaCl = 2

II. KCl = 51

III. $BaCl_2 = 0.69$

IV. $MgSO_4 = 0.22$

The correct order of their flocculating power is

A. $I > II > III > IV$

B. $I > II > III = IV$

C. $IV > III > II > I$

D. $IV = III > II > I$

Answer: C

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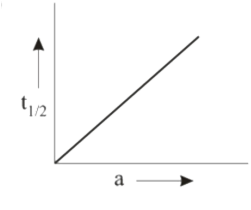
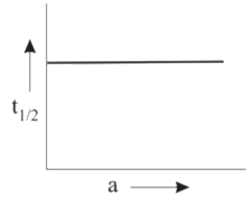
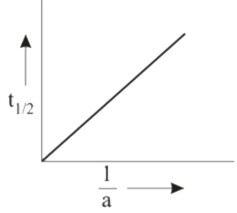
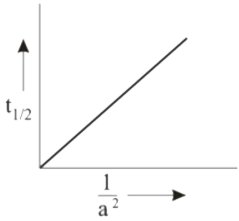
34. Which of the following is correct representation of the variation of half - life with initial concentration of a zero order reaction ?

A. 

B. 

C. 

D. 

Answer: A

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35. In the given reaction $HCOONa \xrightarrow{400^\circ C} (X) + (Y)$, (X) and (Y) will be

A. $\begin{matrix} COONa \\ | \\ COOH \end{matrix}$ and H_2

$COONa$

B. $\begin{vmatrix} \\ COONa \end{vmatrix}$ and H_2

$COONa$

C. $\begin{vmatrix} \\ COONa \end{vmatrix}$ and H_2O

$COOH$

D. $\begin{vmatrix} \\ COOH \end{vmatrix}$ and H_2

Answer: B

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36. In the reaction sequence $C_6H_5CHO \xrightarrow{NaCN\,/\,HCl} (X) \xrightarrow{H_2O\,/\,H^{\oplus}}$ product, Product will be

A. Optically inactive acid

B. Optically inactive α - hydroxy acid

C. Racemic mixture of two optically active α - hydroxy acid

D. Recemic mixture of two optically active secondary alcohols

Answer: C

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37. The aqueous solution of potassium cyanide is mixed with aqueous solution of $F_e(CN)_2$. The resulting solution will give test for

A. K^+ and CN^- ions

B. K^+, Fe^{2+} and CN^- ions

C. K^+ and $\left[Fe(CN)_6\right]^{3-}$ ions

D. K^+ and $\left[Fe(CN)_6\right]^{4-}$ ions

Answer: D

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38. $C_6H_5 - \overset{OH}{\overset{|}{C}}H - CH_3$ can be prepared form which of the following combinations

A. $C_6H_5 - CHO$ and CH_3MgCl

B. C_6H_5MgBr and CH_3CHO

C. $C_6H_5-\overset{\overset{O}{||}}{C}-CH_3$ and $NaBH_4$

D. All of these

Answer: D

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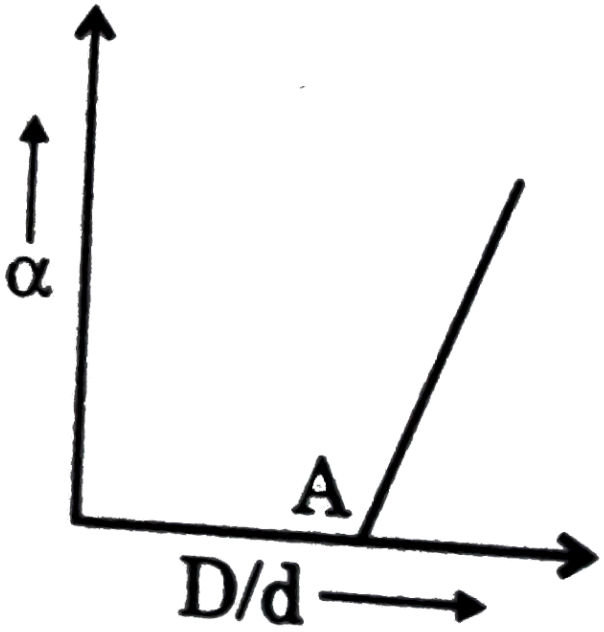
39. Before equilibrium is set-up the chemical reaction $N_2O_4(g) \Leftrightarrow 2NO_2(g)$, vapour density d of the gaseous mixture was measured. If D is the theoretica value of vapour density, variation of α with D/d is given by the graph below. What is value D/d at point

A` ?



A. 0

B. 0.5

C. 1

D. 1.5

Answer: C

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40. Which of the following order is correct ?

A. $K^+ < Ca^{2+} < P^{3-} < S^{2-}$: Ionic size

B. $Na^+_{(aq.)} > K^+_{(aq.)} > Rb^+_{(aq.)} > Cs^+_{(aq.)}$

Electrical conductance

C. $Al^{3+}_{(aq.)} > Mg^{2+}_{(aq)} > Na^+_{(aq.)}$, Hydrated size

D. $I^-_{(aq.)} < Br^-_{(aq.)} < Cl^-_{(aq.)} < F^-_{(aq.)}$: Ionic

mobility

Answer: C

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41. A 110 watt, 110 volt lamp is connected in series with electrolytic cell containing $CdSO_4$. What mass of cadmium will be deposited by the current flowing for 10 hour ? (Atomic mass of Cd = 112.4)

A. 20.96 g

B. 91 g

C. 17 g

D. 26 g

Answer: A

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42. Give the correct order of initials T or F for following statements. Use T if statements is true and F if it is false.

(i) In gold schmidt thermite process aluminium acts as a reducing agent.

(ii) Mg is extracted by electrolysis of aq. solution of $MgCl_2$.

(iii) Extraction of Pb is possible by carbon reduction method

(iv) Red Bauxite is purified by Serpeck's process.

A. TTTF

B. TFFT

C. FTTT

D. TFTF

Answer: D

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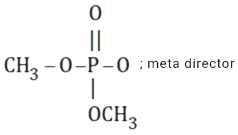
43. Which one of the following is NOT correctly matched ?

A. $-\overset{\oplus}{N}H_3$, meta director

B. $CH_3 - O - \overset{\overset{O}{||}}{\underset{\underset{OCH_3}{|}}{P}} - O$, meta director

C. 

meta director

D. $-CH_3$, meta direction

Answer: D

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44. XeF_2 and XeF_6 are separately hydrolysed then:

A. both give out O_2

B. XeF_6 gives O_2 and $XeF2$ does not

C. XeF_2 alone gives O_2

D. Neither of them gives HF

Answer: C

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45. For a complex reaction $A \xrightarrow{k}$ products

$E_{a1} = 180kJ/mole, E_{a2} = 80kJ/mol, E_{a3} = 50kJ/mol$

Overall rate constant k is related to individual rate constant by the equation $k = \left(\frac{k_1 k_2}{k_3}\right)^{2/3}$. Activation energy (kJ/mol) for the overall reaction is :

A. 140 kJ/mol

B. 150 kJ/mol

C. 43.44 kJ/mol

D. 100 kJ/mol

Answer: A

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