

JEE Main 2022 Question Paper

PDF Chemistry Jul 29 Shift 1

Topic:	Chemistry-Section A
Item No:	61
Question ID:	100261
Question Type:	MCQ
Question:	Which of the following pair of molecules contain odd electron molecule and an expanded octet molecule ?
A:	BCl_3 and SF_6
B:	NO and H_2SO_4
C:	SF_6 and H_2SO_4
D:	BCl_3 and NO

Topic:	Chemistry-Section A
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Item No:	62
Question ID:	100262
Question Type:	MCQ
Question:	$\text{N}_{2(g)} + 3\text{H}_{2(g)} \rightleftharpoons 2\text{NH}_{3(g)}$ 20 g 5 g Consider the above reaction, the limiting reagent of the reaction and number of moles of NH_3 formed respectively are :
A:	H_2 , 1.42 moles
B:	H_2 , 0.71 moles
C:	N_2 , 1.42 moles
D:	N_2 , 0.71 moles

Topic:	Chemistry-Section A
Item No:	63
Question ID:	100263
Question Type:	MCQ
Question:	100 mL of 5% (w/v) solution of NaCl in water was prepared in 250 mL beaker. Albumin from the egg was poured into NaCl solution and stirred well. This resulted in a/an :
A:	Lyophilic sol
B:	Lyophobic sol
C:	Emulsion
D:	Precipitate

Topic:	Chemistry-Section A
Item No:	64
Question ID:	100264
Question Type:	MCQ

Question:	The first ionization enthalpy of Na, Mg and Si, respectively, are : 496, 737 and 786 kJ mol ⁻¹ . The first ionization enthalpy (kJ mol ⁻¹) of Al is :
A:	487
B:	768
C:	577
D:	856

Topic:	Chemistry-Section A
Item No:	65
Question ID:	100265
Question Type:	MCQ
Question:	In metallurgy the term “gangue” is used for :
A:	Contamination of undesired earthy materials.
B:	Contamination of metals, other than desired metal.
C:	Minerals which are naturally occurring in pure form
D:	Magnetic impurities in an ore.

Topic:	Chemistry-Section A
Item No:	66
Question ID:	100266
Question Type:	MCQ
Question:	The reaction of zinc with excess of aqueous alkali, evolves hydrogen gas and gives :
A:	Zn(OH) ₂
B:	ZnO
C:	[Zn(OH) ₄] ²⁻
D:	[ZnO ₂] ²⁻

Topic:	Chemistry-Section A
Item No:	67

Question ID:	100267
Question Type:	MCQ
Question:	Lithium nitrate and sodium nitrate, when heated separately, respectively, give :
A:	LiNO_2 and NaNO_2
B:	Li_2O and Na_2O
C:	Li_2O and NaNO_2
D:	LiNO_2 and Na_2O

Topic:	Chemistry-Section A
Item No:	68
Question ID:	100268
Question Type:	MCQ
Question:	Number of lone pairs of electrons in the central atom of SCl_2 , O_3 , ClF_3 and SF_6 , respectively, are :
A:	0, 1, 2 and 2
B:	2, 1, 2 and 0
C:	1, 2, 2 and 0
D:	2, 1, 0 and 2

Topic:	Chemistry-Section A
Item No:	69
Question ID:	100269
Question Type:	MCQ
Question:	In following pairs, the one in which both transition metal ions are colourless is :
A:	Sc^{3+} , Zn^{2+}
B:	Ti^{4+} , Cu^{2+}
C:	V^{2+} , Ti^{3+}

D:	$\text{Zn}^{2+}, \text{Mn}^{2+}$
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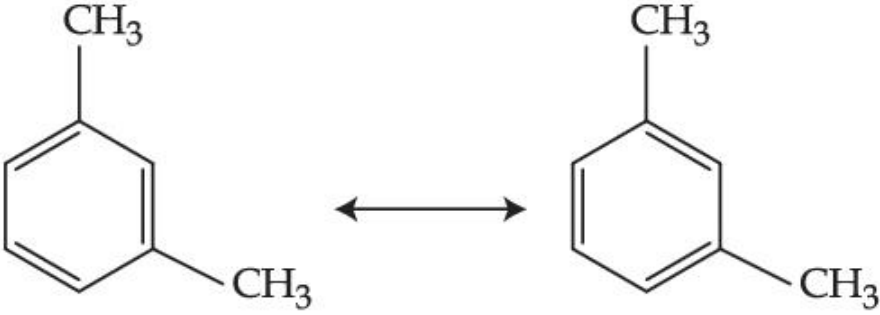
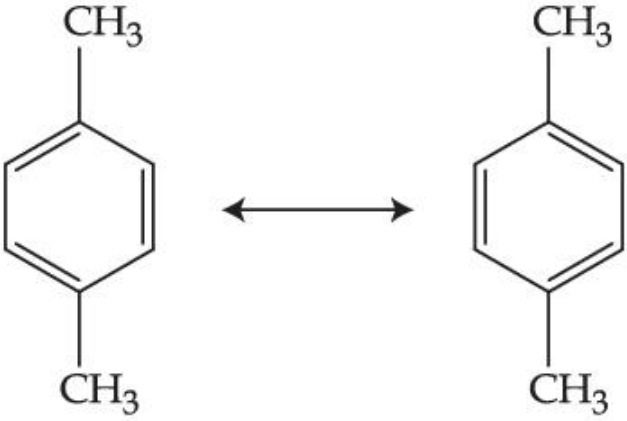
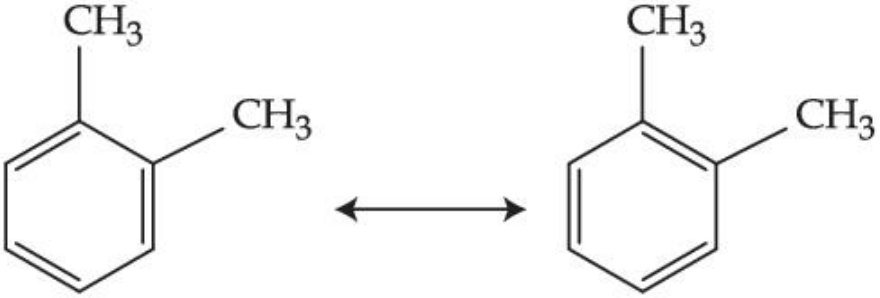
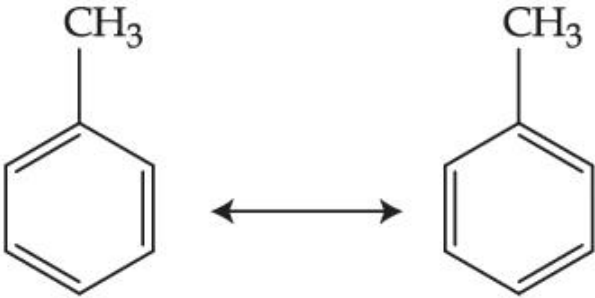
Topic:	Chemistry-Section A
Item No:	70
Question ID:	100270
Question Type:	MCQ
Question:	In neutral or faintly alkaline medium, KMnO_4 being a powerful oxidant can oxidize, thiosulphate almost quantitatively, to sulphate. In this reaction overall change in oxidation state of manganese will be :
A:	5
B:	1
C:	0
D:	3

Topic:	Chemistry-Section A
Item No:	71
Question ID:	100271
Question Type:	MCQ
Question:	Which among the following pairs has only herbicides ?
A:	Aldrin and Dieldrin
B:	Sodium chlorate and Aldrin
C:	Sodium arsenate and Dieldrin
D:	Sodium chlorate and sodium arsenite.

Topic:	Chemistry-Section A
Item No:	72
Question ID:	100272
Question Type:	MCQ
Question:	Which among the following is the strongest Bronsted base ?

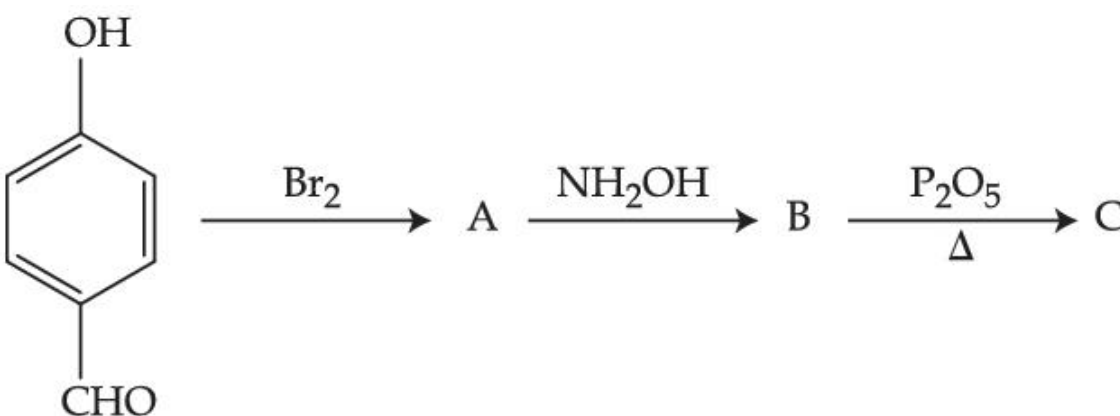
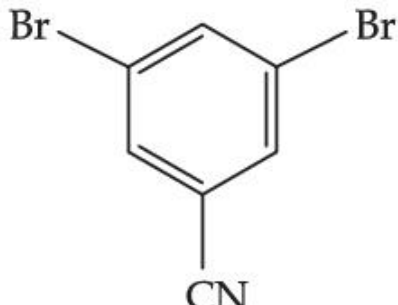
A:	
B:	
C:	
D:	

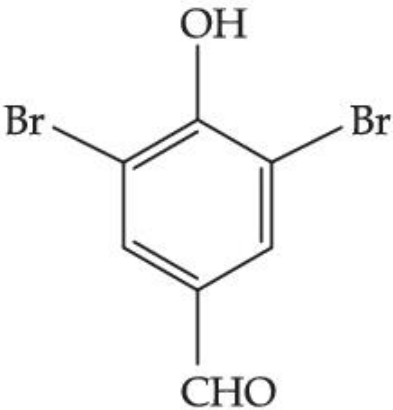
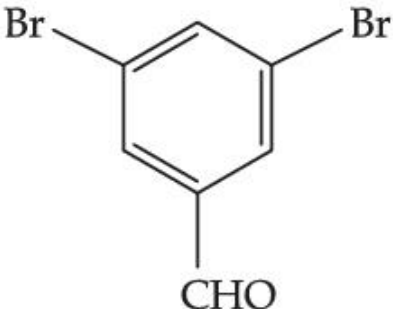
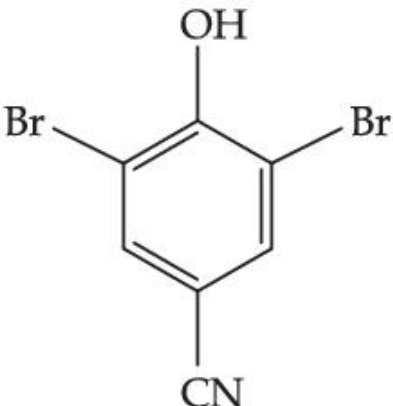
Topic:	Chemistry-Section A
Item No:	73
Question ID:	100273
Question Type:	MCQ
Question:	Which among the following pairs of the structures will give different products on ozonolysis ? (Consider the double bonds in the structures are rigid and not delocalized.)

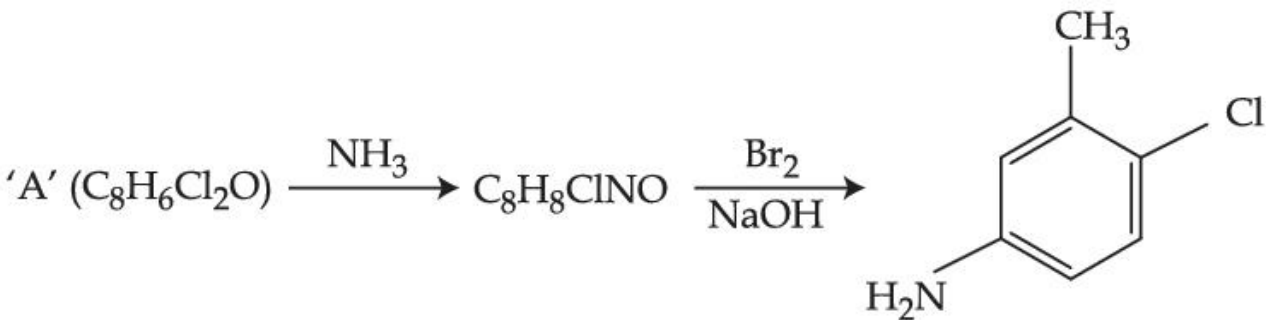
A:	
B:	
C:	
D:	

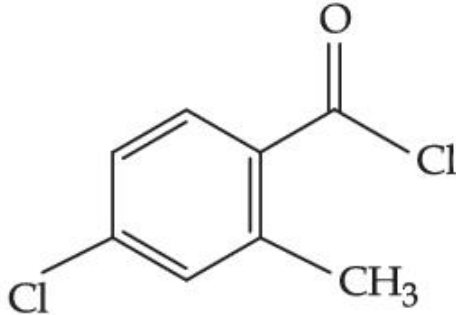
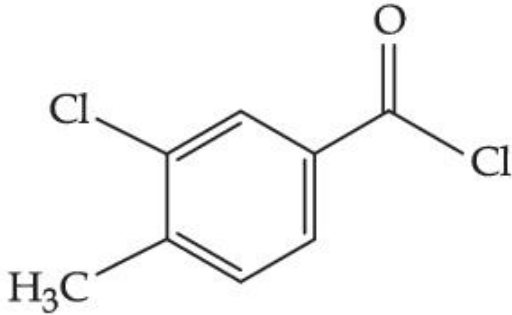
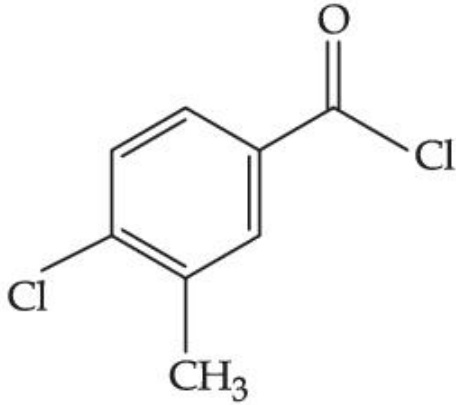
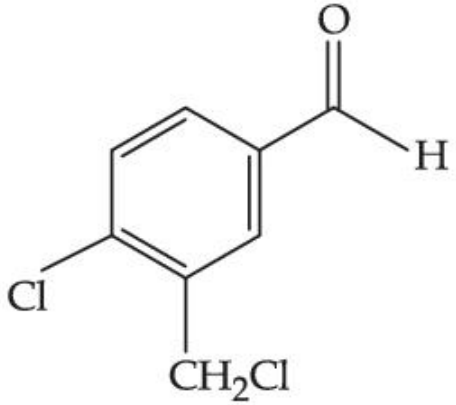
Topic:	Chemistry-Section A
Item No:	74
Question ID:	100274
Question Type:	MCQ

Question:	$ \begin{array}{c} \text{'A'} \\ \text{(Major Product)} \end{array} \xleftarrow[\text{C}_2\text{H}_5\text{OH} - \text{H}_2\text{O}]{\text{AgCN}} \text{CH}_3\text{CH}_2\text{CH}_2\text{Cl} \xrightarrow[\text{C}_2\text{H}_5\text{OH} - \text{H}_2\text{O}]{\text{NaCN}} \begin{array}{c} \text{'B'} \\ \text{(Major Product)} \end{array} $ Considering the above reactions, the compound 'A' and compound 'B' respectively are :
A:	$\text{CH}_3\text{CH}_2\text{CH}_2\text{N}^+\equiv\text{C}^-$, $\text{CH}_3\text{CH}_2\text{CH}_2\text{N}^+\equiv\text{C}^-$
B:	$\text{CH}_3\text{CH}_2\text{CH}_2\text{C}\equiv\text{N}$, $\text{CH}_3\text{CH}_2\text{CH}_2\text{C}\equiv\text{N}$
C:	$\text{CH}_3\text{CH}_2\text{CH}_2\text{N}^+\equiv\text{C}^-$, $\text{CH}_3\text{CH}_2\text{CH}_2\text{C}\equiv\text{N}$
D:	$\text{CH}_3\text{CH}_2\text{CH}_2\text{C}\equiv\text{N}$, $\text{CH}_3\text{CH}_2\text{CH}_2\text{N}^+\equiv\text{C}^-$

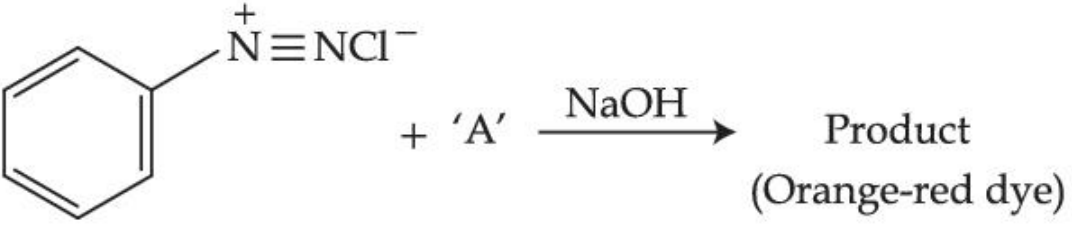
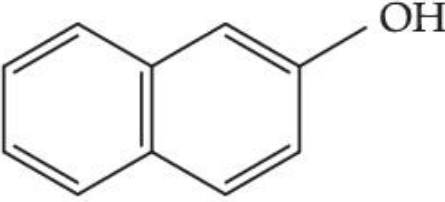
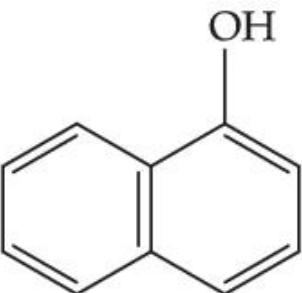
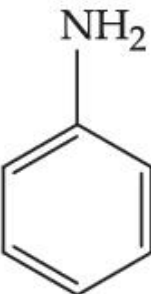
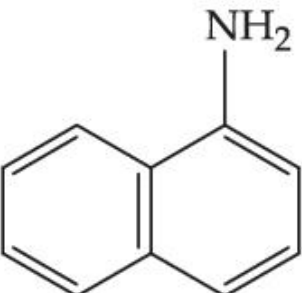
Topic:	Chemistry-Section A
Item No:	75
Question ID:	100275
Question Type:	MCQ
Question:	 Consider the above reaction sequence, the Product 'C' is :
A:	

B:	
C:	
D:	

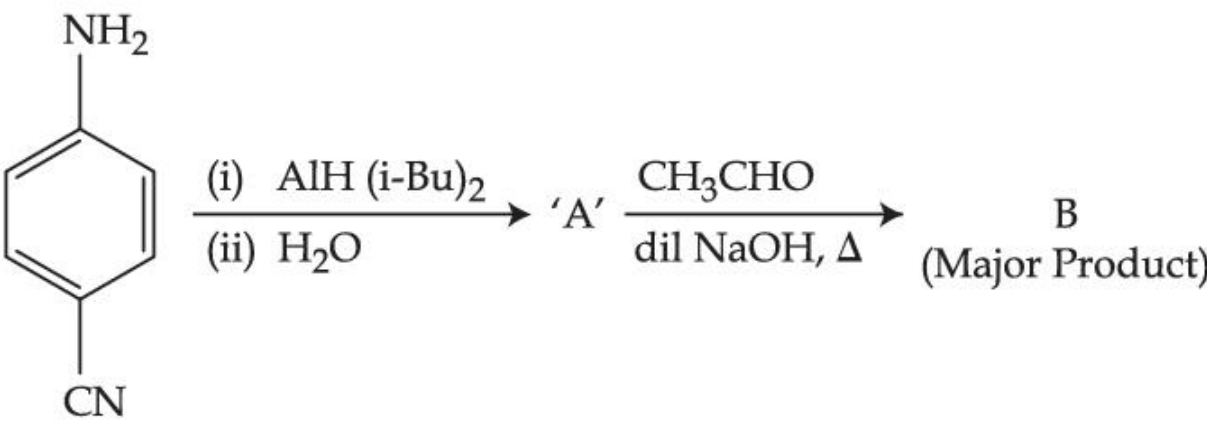
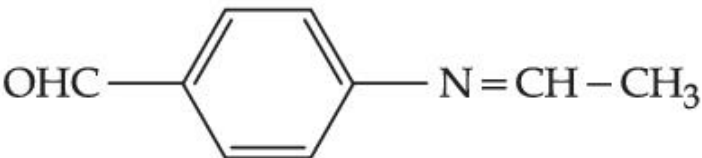
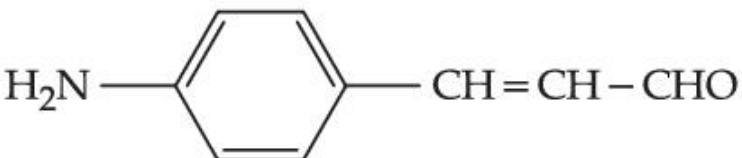
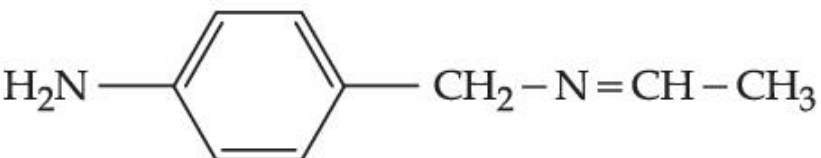
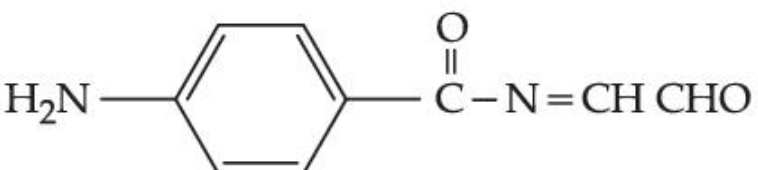
Topic:	Chemistry-Section A
Item No:	76
Question ID:	100276
Question Type:	MCQ
Question:	 Consider the above reaction, the compound 'A' is :

A:	
B:	
C:	
D:	

Topic:	Chemistry-Section A
Item No:	77
Question ID:	100277
Question Type:	MCQ

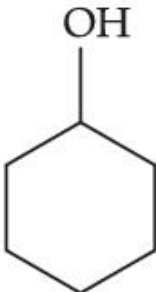
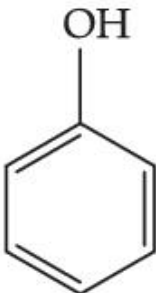
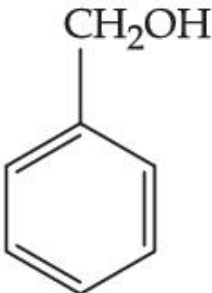
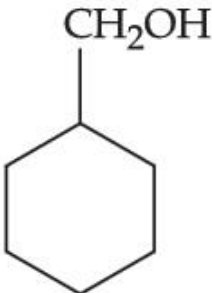
Question:	 Which among the following represent reagent 'A' ?
A:	
B:	
C:	
D:	

Topic:	Chemistry-Section A
Item No:	78
Question ID:	100278
Question Type:	MCQ

Question:	Consider the following reaction sequence :  The product 'B' is :
A:	
B:	
C:	
D:	

Topic:	Chemistry-Section A
Item No:	79
Question ID:	100279
Question Type:	MCQ
Question:	Which of the following compounds is an example of hypnotic drug ?
A:	Seldane
B:	Amytal

C:	Aspartame
D:	Prontosil

Topic:	Chemistry-Section A
Item No:	80
Question ID:	100280
Question Type:	MCQ
Question:	A compound 'X' is acidic and it is soluble in NaOH solution, but insoluble in NaHCO ₃ solution. Compound 'X' also gives violet colour with neutral FeCl ₃ solution. The compound 'X' is :
A:	
B:	
C:	
D:	

Topic:	Chemistry-Section B
Item No:	81
Question ID:	100281
Question Type:	Numeric Answer
Question:	Resistance of a conductivity cell (cell constant 129 m^{-1}) filled with 74.5 ppm solution of KCl is 100Ω (labelled as solution 1). When the same cell is filled with KCl solution of 149 ppm, the resistance is 50Ω (labelled as solution 2). The ratio of molar conductivity of solution 1 and solution 2 is i.e. $\frac{\Lambda_1}{\Lambda_2} = x \times 10^{-3}$. The value of x is _____. (Nearest integer) Given, molar mass of KCl is 74.5 g mol^{-1}.

Topic:	Chemistry-Section B
Item No:	82
Question ID:	100282
Question Type:	Numeric Answer
Question:	Ionic radii of cation A^+ and anion B^- are 102 and 181 pm respectively. These ions are allowed to crystallize into an ionic solid. This crystal has cubic close packing for B^-. A^+ is present in all octahedral voids. The edge length of the unit cell of the crystal AB is _____pm. (Nearest Integer)

Topic:	Chemistry-Section B
Item No:	83
Question ID:	100283
Question Type:	Numeric Answer
Question:	The minimum uncertainty in the speed of an electron in an one dimensional region of length $2a_0$ (Where a_0 = Bohr radius 52.9 pm) is _____ km s^{-1}. (Given : Mass of electron = $9.1 \times 10^{-31} \text{ kg}$, Planck's constant $h = 6.63 \times 10^{-34} \text{ Js}$)

Topic:	Chemistry-Section B
Item No:	84
Question ID:	100284

Question Type:	Numeric Answer
Question:	When 600 mL of 0.2 M HNO_3 is mixed with 400 mL of 0.1 M NaOH solution in a flask, the rise in temperature of the flask is _____ $\times 10^{-2}^\circ\text{C}$. (Enthalpy of neutralisation = 57 kJ mol^{-1} and Specific heat of water = $4.2 \text{ JK}^{-1} \text{ g}^{-1}$) (Neglect heat capacity of flask)

Topic:	Chemistry-Section B
Item No:	85
Question ID:	100285
Question Type:	Numeric Answer
Question:	If O_2 gas is bubbled through water at 303 K, the number of millimoles of O_2 gas that dissolve in 1 litre of water is _____. (Nearest Integer) (Given : Henry's Law constant for O_2 at 303 K is 46.82 k bar and partial pressure of $\text{O}_2 = 0.920$ bar) (Assume solubility of O_2 in water is too small, nearly negligible)

Topic:	Chemistry-Section B
Item No:	86
Question ID:	100286
Question Type:	Numeric Answer
Question:	If the solubility product of PbS is 8×10^{-28}, then the solubility of PbS in pure water at 298 K is $x \times 10^{-16} \text{ mol L}^{-1}$. The value of x is _____. (Nearest Integer) [Given : $\sqrt{2} = 1.41$]

Topic:	Chemistry-Section B
Item No:	87
Question ID:	100287
Question Type:	Numeric Answer

Question:	The reaction between X and Y is first order with respect to X and zero order with respect to Y.			
	Experiment	$\frac{[X]}{\text{mol L}^{-1}}$	$\frac{[Y]}{\text{mol L}^{-1}}$	$\frac{\text{Initial rate}}{\text{mol L}^{-1} \text{ min}^{-1}}$
	I	0.1	0.1	2×10^{-3}
	II	L	0.2	4×10^{-3}
	III	0.4	0.4	$M \times 10^{-3}$
	IV	0.1	0.2	2×10^{-3}
Examine the data of table and calculate ratio of numerical values of M and L. (Nearest Integer)				

Topic:	Chemistry-Section B
Item No:	88
Question ID:	100288
Question Type:	Numeric Answer
Question:	In a linear tetrapeptide (Constituted with different amino acids), (number of amino acids) – (number of peptide bonds) is _____.

Topic:	Chemistry-Section B
Item No:	89
Question ID:	100289
Question Type:	Numeric Answer
Question:	In bromination of Propyne, with Bromine 1, 1, 2, 2-tetrabromopropane is obtained in 27% yield. The amount of 1, 1, 2, 2-tetrabromopropane obtained from 1 g of Bromine in this reaction is _____ $\times 10^{-1}$ g. (Nearest integer) (Molar Mass : Bromine = 80 g/mol)

Topic:	Chemistry-Section B
Item No:	90
Question ID:	100290
Question Type:	Numeric Answer

Question:	$[\text{Fe}(\text{CN})_6]^{3-}$ should be an inner orbital complex. Ignoring the pairing energy, the value of crystal field stabilization energy for this complex is $(-)$ _____ Δ_o . (Nearest integer)
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