	Synth	esis	NEE	T(UG)–	2025 E		TION	
Sunthesis Comp of Counting	NEET (UG) / JEE-M	IAIN /ADVANCED		(Held On	Sunday 4	th May, 2025)	
			CH	EMISTR	Y			
(Question Paper with Answer & Solution)								
Paper C	ode: 47					Test Date :	04.05.2025	
46	If the melor co		(A) of a 0.0	$150 \text{ mal } 1^{-1} calu$	tion of a man	abasia waak asid i	$\sim 00 \text{ C} \text{ cm}^2 \text{ mol}^-$	
40.	1 the molar co $\frac{1}{1}$ its extent (d	earee) of d	$(\Lambda_{\rm m})$ of a 0.0	150 MOL - SOLU	uon of a mon	Odasic weak aciu is	5 90 5 Cm² moi	
	$\lambda^{0} = 349.6 \text{ S cm}^{2} \text{ mol}^{-1} \text{ and } \lambda^{0} = 50.4 \text{ S cm}^{2} \text{ mol}^{-1}$							
	(1) 0 215	()) 0 115	(3) 0 1	25	(4) 0 225		
Ans.	(1) 0.215	(2	.) 0.115	(5) 0.1.		(1) 0.225		
Sol.	$\Lambda_{\rm m} = 90 \text{ S Cr}$	n ² mol ⁻¹						
	$\Lambda^0 = \Lambda^0 + \Lambda$	⁰ (Accordi	ng Kohlrausch	n law)				
	10^{-34061}	$E_{-}(1.000101)$	$0.5 \text{ cm}^2 \text{ mol}^-$	1				
	Λ _m – 5-5.0 -	- 50						
	Degree of diss	ociation (α	$= \frac{\Lambda_{\rm m}}{\Lambda_{\rm m}} = \frac{90}{400}$	- = 0.225				
47.	Given below a	re two state	ement :					
	Statement I : A hypothetical diatomic molecule with bond order zero is quite stable.							
	Statement II : As bond order increases, the bond length increases.							
	In the light of t	he above s	tatement, cho	ose the most ap	propriate ans	wer from the optio	ns given below:	
	(1) Statement	I is false bu	it Statement I	I is true				
	(2) Both State	ment I and	Statement II	are true				
	(3) Both Stater	ment I and	Statement II a	are false				
_	(4) Statement	I is ture bu	t Statement II	is false				
Ans.	(3) Both Stat	tement I a	and Stateme	nt II are false	; the melecule	will not forms and it	tio unatable. Co	
501.	statement–I is	false	n two atoms in	1 Zero IL means	the molecule	will not form and li	l is unstable. So	
	B. L $\propto \frac{1}{RO}$ (Bond order inversive proportional to bond length)							
	So statement-	II is also fal	se.					
48.	The ratio of the	e waveleng	ths of the light	t absorbed by a	Hydrogen ato	m when it undergo	bes n = 2 \rightarrow n=3	
	and $n = 4 \rightarrow n$	ı = 6 transi	tion, respectiv	ely, is				
	(1) $\frac{1}{4}$	(2	$(1) \frac{1}{36}$	(3) $\frac{1}{16}$		(4) <u>1</u> 9		
Ans.	(1) $\frac{1}{4}$							
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Sol.

Wavelength during transmition of electron

$$\lambda = \frac{1}{R_{H}2^2} \left(\frac{n_1^2 r_2^2}{(n_1^2 - n_1^2)} \right)$$

$$(\lambda_1)_{2,3} = \frac{1}{R_{H}} \left(\frac{4 \times 9}{9 - 4} \right)$$

$$(\lambda_2)_{1,6} = \frac{1}{R_{H}} \left(\frac{16 \times 36}{36 - 16} \right)$$

$$\left(\frac{\lambda_1}{\lambda_2} \right)_{1,6} = \frac{35}{36} \times \frac{20}{16 \times 36} = \frac{1}{4}$$
49. The correct order of wavelength of light absorbed by the following complexes is :
A : $\left[Co(NH_3)_6 \right]^{3+}$
B : $\left[Co(CN)_6 \right]^{3-}$
C : $\left[Cu(H_2O)_4 \right]^{2+}$
D : $\left[Ti(H_2O)_6 \right]^{3+}$
Choose the correct answer from the options given belwo :
(1) C < A < D < B
(2) B < D < A < C
(3) B < A < D < C
(4) C < D < A < B
Ans.
(3) B < A < D < C
Sol. A stronger ligand will cause a greater splitting of the d-orbitals.
Increasing order of of strength of ligand
H₂O < NH₃ < CN
Octahderal (C.N = 6) splitting of d-orbitals is more as compared to zetrohedral (C.N. = 4) $\left(\Lambda_0 = \frac{9}{4} \Lambda_t \right)$
then increasing order of splitting energy
C < D < A < B
Increasing order of wavelength of light absorbed $\left(\lambda \propto \frac{1}{E} \right)$
B < A < D < C
50. If the rate constant of a reaction is 0.03 s⁻¹, how much time does it take for 7.2 mol L⁻¹ concentration
of the reactant to get reduced to 0.9 mol L⁻¹?
(Given : log 2 = 0.301)
(1) 21.0 s
(2) 69.3 s
(3) 23.1 s
(4) 210 s
Ans.
(2) 69.3 s
Sol. K = 0.03 S⁻¹
[R]₀ = 7.2 mol/L
[R]₀ = 7.2 mol/L
[R]₀ = 0.9 mol/L
for first order



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La Surdicia	Synthesis	NEET(l	JG)–2025 E					
54	Among the following, ch	ose the ones with e	qual number of atoms					
54.	A 212 α of Na CO (s) [r	nolar mass – 106 d						
	B 248 g of Na $O(s)$ [mo	lar mass – 62 gl						
	C 240 g of Na ₂ O (s) [mo	$a_1 mass = 02 g$						
	D 12 a of H (a) [molar	$mass = 2 a^{1}$						
	E 220 a of CO (a) [mol:	ar mass – 2 gj						
	Choose the correct answer from the ontions given below \cdot							
	(1) P. D. and F. only (2) A. P. and C. only (2) A. P. and D. only (4) P. C. and D. ank							
Anc	(1) B , D and E only (2)	2) A, B and C Only	(5) A, B and D only	(4) D, C and D only				
AIIS. Sol								
301.	m 212 $m 212$ $c m 212$							
	$n = \frac{1}{Mw} = \frac{1}{106} = 2$							
	no. of atoms = $2 \times 6 = 1$	12 N _A						
	Option B 248 g Na ₂ O							
	$n = \frac{248}{62} = 4$							
	no. of atoms = $4 \times 3 = 1$	12 N _A						
	option C 240 g NaOH							
	$n = \frac{240}{40} = 6$							
	no. of atoms = $6 \times 3 = 18$	3 N _A						
	Option D 12 g H ₂							
	$n = \frac{12}{2} = 6$							
	no. of atoms = $6 \times 2 = 1$	12 N _A						
	Option E 220 g CO ₂							
	$n = \frac{220}{44} = 5$							
	no. of atoms = $5 \times 3 = 1$	15 N _A						
	A, B and D have same no	o. of atoms.						
55.	Among the given compound with * is :	unds I-III, the correc	ct order of bond dissocia	ition energy of C–H bond marked				
	Н	∠H						
		-c ^{#C'*}	× ^H _H					
	I II		III					
	$(1) II > III > I \qquad (2$	2) II > I > III	(3) I > II > III	(4) $III > II > I$				

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U Contractor U	Synthesis NEET (UG) / JEE-MAIN / ADVANCED	(UG)–2025 E Held On Sunday 4t	XAMINATION h May, 2025)
Ans.	(2) II > I > III		
Sol.	C – H Bond energy α overlapping between C_{sp} – H > Csp ² – H > Csp ³ – H Bond energy	en orbitals	
	$\bigcirc C = \overset{*}{\underset{sp}{\bigcirc} C} H > \bigcirc H > 0$	sp ³ H	
56.	The standard heat of formation, in kcal/ r	nol of Ba ²⁺ is :	
	[Given : standard heat of formation of SC	D_4^{2-} ion (aq) = -216 kcal/mo	ol,
	$BaSO_4(s) = -4.5$ kcal/mol, standard heat	of formation of $BaSO_4(s) = -$	-349 kcal/mol]
	(1) + 220.5 (2) -128.5	(3) –133.0	(4) +133.0
Ans.	(2) –128.5		
Sol.	Crystallisation of BaSO _{4(s)}		
	$Ba_{(aq)}^{+2} + SO_{4(aq)}^{-2} \longrightarrow BaSO_{4(s)}$		
	$\Delta_{\rm H}$ = -4.5 kcal /mol		
	$\Delta_{\rm r} {\rm H} = (\Delta_{\rm f} {\rm H})_{\rm p} - (\Delta_{\rm f} {\rm H})_{\rm p}$		
	$-4.5 = -349 - (\Delta_{\rm f} H_{({\rm Ba}^{+2})} + (-216))$		
	$-4.5 = -349 - \Delta_{f}H_{(Ba^{+2})} + (-216)$		
	$\Delta_{\rm f} {\rm H}_{({\rm Ba}^{+2})} = -349 + 216 + 4.5 = -128.5$	kcal/mol	
57.	Consider the following compounds :		
	\underline{KO}_2 , $\underline{H}_2\underline{O}_2$ and $\underline{H}_2\underline{SO}_4$		
	The oxidation states of the underlined ele	ments in them are, respectiv	vely,
	(1) +4, -4, and +6 (2) +1,-1, and +6	5 (3) +2,-2; and +6	(4) +1,-2, and +4
Ans.	(2) +1,-1, and +6		
Sol.	KO ₂ (Super oxide)		
	Alkali metal show only one oxidation state	e which is +1	
	O.S. of K is +1		
	H ₂ O ₂ (Peroxide)		
	(2x + 1) + 2x = 0		
	2X = -2		
	x = -1		
	H-SO		
	(2x + 1) + x + (4x - 2) = 0		
	+2 + x - 8 = 0		
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A Surdition	NEET (UG) / JEE-MAIN /ADVANCED	(Held On Sunday 4th May, 2025)	
Ans.	(4) A and D only		
Sol.	A. [NiCl ₄] ^{2–}		
	Oxidation state of Ni is +2	2	
	tetrahedral complex		
	Electronic configuration e	2 ⁴ t ₂ ⁴	
	unpaired electrons – 2 sc	paramagnetic	
	B. Ni(CO) ₄		
	Oxidation state of Ni is O		
	tetrahedral complex		
	electronic configuration e	⁴ t ₂ ⁶	
	unpaired electrons $\rightarrow 0$ s	o diamagnetic	
	C. [Ni(CN) ₄] ^{2–}		
	Oxidation state of NI is +	2	
	Square planar	0.	
	Electronic configuration (d°)	
	unpaired electrons $\rightarrow 0$ s	so diamagnetic	
	D. $[NI(H_2O)_6]^2$		
	Oxtuation state of NLIS +	2	
	Electronic configuration t	6 0 2	
		2g ^C g o paramagnetic	
	F [(PPh)]	o paramagnetic	
	Oxidation state of NI is Ω		
	tetrahedral Electronic cor	pfiguration d ¹⁰	
	unpaired electrons $\rightarrow 0.5$		
61.	Which one of the following	ng compounds does not decolourize bromine water ?	
•			
	(1) \bigcirc NH_2 (2)	$(3) \bigcirc OH \qquad (4) \bigcirc CH = 0$	CH₂
A			
ANS.			
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	Suntherin	NEET(UG)–2025 EXAMINATION						
La Section La	NEET (UG) / JEE-MAIN /ADVANCED	(Held On Sunday 4th May, 2025)						
	Choose the correct answ	er from the options given below :						
	(1) A-IV, B–III, C–II, D–I	(2) A-I, B–III, C–II, D–IV						
	(3) A-IV, B–III, C–I, D–II	(4) A–II, B–III, C–I, D–IV						
Ans.	(3) A-IV, B-III, C-I,	B–III, C–I, D–II						
Sol.	(Name of Vitamin) (Deficiency disease)						
	A. Vitamin B ₁₂ I.	n B ₁₂ I. Pernicious anaemia						
	B. Vitamin D II	II. Rickets						
	C. Vitamin B ₂ II	II. Cheilosis						
	D. Vitamin B ₆ I	V. Convulsions						
64.	Given below are two statements :							
	Statement I : Ferromag	gnetism is considered as an extreme form of paramagnetism.						
	Statement II : The number of unpaired electrons in a Cr^{2+} ion (Z = 24) is the same as that of a Nd ³⁺ ion (Z = 60)							
	In the light of the above statements, choose the correct answer from the options given below :							
	(1) Statement I is false but Statement II is true							
	(2) Both Statement I and Statement II are true							
	(3) Both Statement I and Statement II are false							
	(4) Statement I it true but Statement II is false							
Ans.	(4) Statement I it true but Statement II is false							
Sol.	Ferromagnetism is cosidered as an extreme from of paramagnetism.							
	$Cr^{+3} = [Ar]3d^44s^0$ (4 unpaired electron)							
	$Nd^{+3} = [Xe] 4f^{3}6s^{0}$ (3 unpaired electron)							
65.	If the half-life $(t_{1/2})$ for a f the reaction is closest to	irst order reaction is 1 minute, then the time required for 99.9% completion of :						
	(1) 10 minutes	(2) 2 minutes (3) 4 minutes (4) 5 minutes						
Ans.	(1) 10 minutes							
	$t_{1/2} = 1 min$							
	$K = \frac{0.693}{t_{1/2}} = 0.693 \text{min}^{-1}$							
	$t = \frac{2.303}{K} log \left(\frac{\left[R \right]_0}{\left[R \right]_t} \right)$							
	$t_{(99.9\%)} = \frac{2.303}{0.693} \log\left(\frac{100}{0.1}\right)$	$\left(\frac{1}{2}\right)$						
	t _(99.9%) = 10 min							
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66.	The correct order of decr	easing basic strength	n of the given amines	is :		
	(1) benzenamine > ethar	namine > N-methylan	iline > N-ethylethana	mine		
	(2) N-methylaniline > ber	nzenamine > ethanar	nine > N-ethylethana	mine		
	(3) N-ethylethanamine >	ethanamine > benze	namine > N-methylar	niline		
	(4) N-ethylethanamine > ethanamine > N-methylaniline > benzenamine					
Ans.	(3) N-ethylethanamin	-ethylethanamine > ethanamine > benzenamine > N-methylaniline				
Sol.	Basic strength order					
		$NH - CH_3$	ŇH₂ ↓			
	$(C_2H_5)_2\ddot{N} > C_2H_5\ddot{N}H_2$	> (O) >	\bigcirc			
67.	Match List I with List II					
	List–I		List-II			
	(Ion)		(Group number in	Cation Anylysis)		
	A. CO ²⁺		I. Group–I			
	B. Mg ²⁺		II. Group–III			
	C. Pb ²⁺		III. Group–IV			
	D. Al ³⁺ IV. Group–VI					
	Choose the correct answer from the options given below :					
	(1) A-III, B-II, C-I; D-IV		(2) A-III, B-IV, C-II, I	D-I		
	(3) A-III, B-IV, C-I, D-II		(4) A-III, B-II, C-IV, [D-I		
Ans.	(3) A-III, B-IV, C-I, D)-II				
68.	Phosphoric acid ionizes in	three steps with the	ir ionization constant	values		
	K_{a_1} , K_{a_2} and K_{a_3} respectively.	ctively,				
	while K is the overall ioni	zation constant. Whic	h of the following sta	tements are true?		
	A. $\log K = \log K_{a_1} + \log K_{a_2} + \log K_{a_3}$					
	B. H ₃ PO ₄ is stronger acid	H_3PO_4 is stronger acid than $H_2PO_4^-$ and HPO_4^{2-} .				
	C. $K_{a_1} > K_{a_2} > K_{a_3}$					
	D. $K_{a_1} = \frac{K_{a_2} + K_{a_2}}{2}$					
	Choose the correct answ	wer from the options	given below:			
	(1) A, B and C only (2	2) A and B only	(3) A and C only	(4) B, C and D only		
Ans.	(1) A, B and C only					
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Approtic weak acid $O_4 \implies H^+ + H_2PO_4^- K_{a_1}$ $O_4^- \implies H^+ + HPO_4^{-2} K_{a_2}$ $O_4^{-2} \implies H^+ + PO_4^{-3} K_{a_3}$ $O_4 \implies H^+ + PO_4^{-3} K = K_{a_1} \times K_{a_2} \times K_{a_3}$ $K = \log K_{a_1} + \log K_{a_2} + \log K_{a_3}$ $> K_{a_2} > K_{a_3}$ ch of the following statements are true? Unlike Ga that has a very high melting point, Cs has a very low melting point. On Pauling scale, the electronegativity values of N and Cl are not the same. $w_r K^+, C\Gamma^-, Ca^{2+}, and S^{2-} are all isoelectronic species The correct order of the first ionization enthalpies of Na, Mg, Al, and Si is Si > Al > Mg > Na. the atomic radius of Cs is greater than that of Li and Rb sose the correct answer from the options given below : A, C and E only (2) A, B and E only (3) C and E only (4) C and D only C and E only the correct order on the options given below : A C and E only (2) A, B and E only (3) C and E only (4) C and D only C and E only$					
$O_{4} \longrightarrow H^{+} + H_{2}PO_{4}^{-} K_{a_{1}}$ $O_{4}^{-} \longrightarrow H^{+} + HPO_{4}^{-2} K_{a_{2}}$ $O_{4}^{-2} \longrightarrow H^{+} + PO_{4}^{-3} K_{a_{3}}$ $O_{4} \longrightarrow H^{+} + PO_{4}^{-3} K = K_{a_{1}} \times K_{a_{2}} \times K_{a_{3}}$ $K = \log K_{a_{1}} + \log K_{a_{2}} + \log K_{a_{3}}$ $> K_{a_{2}} > K_{a_{3}}$ Ich of the following statements are true? Inlike Ga that has a very high melting point, Cs has a very low melting point. In Pauling scale, the electronegativity values of N and Cl are not the same. It, K^{+}, Cl^{-}, Ca^{2+}, and S^{2-} are all isoelectronic species The correct order of the first ionization enthalpies of Na, Mg, Al, and Si is Si > Al > Mg > Na. The atomic radius of Cs is greater than that of Li and Rb Isose the correct answer from the options given below : A, C and E only (2) A, B and E only (3) C and E only (4) C and D only C and E only The spectrum of the price optime					
$Q_{4}^{-} \longleftrightarrow H^{+} + HPQ_{4}^{-2} K_{a_{2}}$ $Q_{4}^{-2} \longleftrightarrow H^{+} + PQ_{4}^{-3} K_{a_{3}}$ $Q_{4} \longleftrightarrow H^{+} + PQ_{4}^{-3} K = K_{a_{1}} \times K_{a_{2}} \times K_{a_{3}}$ $K = \log K_{a_{1}} + \log K_{a_{2}} + \log K_{a_{3}}$ $> K_{a_{2}} > K_{a_{3}}$ $K = \log k_{a_{1}} + \log K_{a_{2}} + \log K_{a_{3}}$ $> K_{a_{2}} > K_{a_{3}}$ $K = \log k_{a_{1}} + \log K_{a_{2}} + \log K_{a_{3}}$ $> K_{a_{2}} > K_{a_{3}}$ $K = \log k_{a_{1}} + \log K_{a_{2}} + \log K_{a_{3}}$ $= k_{a_{2}} \times k_{a_{3}}$ $R = \log k_{a_{1}} + \log K_{a_{2}} + \log K_{a_{3}}$ $= k_{a_{2}} \times k_{a_{3}}$ $R = \log k_{a_{1}} + \log K_{a_{2}} + \log K_{a_{3}}$ $= k_{a_{2}} \times k_{a_{3}}$ $R = \log k_{a_{1}} + \log K_{a_{2}} + \log K_{a_{3}}$ $= k_{a_{2}} \times k_{a_{3}}$ $R = \log k_{a_{1}} + \log K_{a_{2}} + \log K_{a_{3}}$ $= k_{a_{2}} \times k_{a_{3}}$ $R = k_{a_{2}} \times k_{a_{3}}$ $R = k_{a_{2}} \times k_{a_{3}}$ $R = k_{a_{1}} \times k_{a_{2}} \times k_{a_{3}} \times k_{a_{3}}$ $R = k_{a_{1}} \times k_{a_{2}} \times k_{a_{3}} $					
$O_4^{-2} \longrightarrow H^+ + PO_4^{-3}$ K_{a_3} $O_4 \longrightarrow H^+ + PO_4^{-3}$ $K = K_{a_1} \times K_{a_2} \times K_{a_3}$ $K = \log K_{a_1} + \log K_{a_2} + \log K_{a_3}$ $> K_{a_2} > K_{a_3}$ ich of the following statements are true? Unlike Ga that has a very high melting point, Cs has a very low melting point. On Pauling scale, the electronegativity values of N and Cl are not the same. $K_r, K^+, Cl^-, Ca^{2+}, and S^{2-}$ are all isoelectronic species The correct order of the first ionization enthalpies of Na, Mg, Al, and Si is Si > Al > Mg > Na. the atomic radius of Cs is greater than that of Li and Rb toose the correct answer from the options given below : A, C and E only (2) A, B and E only (3) C and E only (4) C and D only C and E only has low melting point of Cl is greater than pitcogen					
$O_4 = \underbrace{ \dots H^+ + PO_4^ 3}_{A_2} K = K_{a_1} \times K_{a_2} \times K_{a_3}$ $K = \log K_{a_1} + \log K_{a_2} + \log K_{a_3}$ $> K_{a_2} > K_{a_3}$ ch of the following statements are true? Unlike Ga that has a very high melting point, Cs has a very low melting point. On Pauling scale, the electronegativity values of N and Cl are not the same. $w_r, K^+, C\Gamma^-, Ca^{2+}, and S^{2-}$ are all isoelectronic species The correct order of the first ionization enthalpies of Na, Mg, Al, and Si is Si > Al > Mg > Na. The atomic radius of Cs is greater than that of Li and Rb toose the correct answer from the options given below : A, C and E only (2) A, B and E only (3) C and E only (4) C and D only C and E only has low melting point of Cl is greater than pitrogen					
$O_{4} = H^{+} + PO_{4}^{-3} K = K_{a_{1}} \times K_{a_{2}} \times K_{a_{3}}$ $K = \log K_{a_{1}} + \log K_{a_{2}} + \log K_{a_{3}}$ $> K_{a_{2}} > K_{a_{3}}$ ch of the following statements are true? Unlike Ga that has a very high melting point, Cs has a very low melting point. On Pauling scale, the electronegativity values of N and Cl are not the same. Ar, K ⁺ , Cl ⁻ , Ca ²⁺ , and S ²⁻ are all isoelectronic species The correct order of the first ionization enthalpies of Na, Mg, Al, and Si is Si > Al > Mg > Na. The atomic radius of Cs is greater than that of Li and Rb The correct answer from the options given below : A, C and E only (2) A, B and E only (3) C and E only (4) C and D only C and E only The solution of the price of the point (5) Is greater than that of Li and Rb The solution of the point (5) Is greater than that of Li and F only (4) C and D only (5) Is greater than point (6) Is greater than point (7) Is greater (7) Is greater (7) Is greater					
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The correct order of the first ionization enthalpies of Na, Mg, Al, and Si is Si > Al > Mg > Na. The atomic radius of Cs is greater than that of Li and Rb mose the correct answer from the options given below : A, C and E only (2) A, B and E only (3) C and E only (4) C and D only C and E only mas low melting point					
The atomic radius of Cs is greater than that of Li and Rb hose the correct answer from the options given below : A, C and E only (2) A, B and E only (3) C and E only (4) C and D only C and E only has low melting point of Cl is grater than pitrogen					
A, C and E only (2) A, B and E only (3) C and E only (4) C and D only C and E only has low melting point of Cl is gratesthan pitrogen					
A, C and E only (2) A, B and E only (3) C and E only (4) C and D only C and E only has low melting point of Cl is gratesthan pitrogen					
C and E only nas low melting point					
nas low melting point					
of Clic gratesthan hitrogram					
Ar, K ⁺ , Cl ⁻ , Ca ²⁺ , S ^{2–} all have 18 electrons					
Order of first ionization enthalpies					
Si > Mg > Al > Na					
Order of atomic radius					
> RD > Li					
tempert T + Like nitregen that can form ammonia, arconic can form arging					
tement I: Like mirogen that can form antimonia, arsenic can form arsine.					
tement II: Antimony cannot form antimony pentoxide.					
w.					
Statement I is incorrect but Statement II is correct					
Both Statement 1 and Statement II are correct					
Both Statement 1 and Statement II are incorrect					
Statement I is correct but Statement II is incorrect					
Statement I is correct but Statement II is incorrect					

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Contraction Contraction	NEET (UG) / JEE-MAIN /ADVANCED	(Held On Sunday	4th May, 2025				
71.	Which of the following aqu	eous solution will exhibit highest boiling	point?				
	(1) 0.015 M C ₆ H ₁₂ O ₆ (2)) 0.01 M Urea (3) 0.01 M KNO ₃	(4) 0.01 M Na ₂ S	04			
Ans.	(4) 0.01 M Na ₂ SO ₄						
Sol.	No. of particals (im) \propto colli	gative properties					
	(im) ∞ boiling point						
	0.015 M ($C_6H_{12}O_6$) im = 0	0.015					
	0.01 M (Urea) im = 0.01						
	$0.01 \text{ M} (\text{KNO}_3) \text{ im} = 0.02$						
	$0.01 \text{ M} (\text{Na}_2\text{SO}_4) \text{ im} = 0.03$						
	So 0.01 M (Na ₂ SO ₄) has highest bailing point						
72.	Give below are two statement :						
	Statement I : Benzenediazonium salt is prepared by the reaction of aniline with nitrous acid at 273 -						
	278 K. It decomposes easily in the dry state.						
	Statement II : Insertion of iodine into the benzene ring is difficult and hence iodobenzene is prepared						
	through the reaction of benzenediazonium salt with KI.						
	In the light of the above statement, choose the most appropriate answer from the options given below :						
	(1) Statement I is incorrect but Statement II is correct						
	(2) Both Statement I and Statement II are correct						
	(3) Both Statement I and Statement II are incorrect						
	(4) Statement I is correct but Statement II is incorrect						
Ans.	(2) Both Statement I a	nd Statement II are correct					
Sol.	Statement I & II Both are	correct					
73.	Identify the suitable reage	ent for the following conversion.					
	O 						
		CHU					
	(1) H ₂ / Pd-BaSO ₄						
	(2) (i) LiAlH ₄ , (ii) H ⁺ /H ₂ O						
	(3) (i) AlH(iBu) ₂ , (ii) H ₂ O						
	(4) (i) NaBH ₄ , (ii) H ⁺ /H ₂ O						
Ans.	(3) (i) AlH(iBu) ₂ , (ii) H ₂	0					
		сно					
Sol.		$\overrightarrow{AL-H}$					
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J Synthesis	K Synthesis	NEE	: I (UG)-202 (Held On Sum	25 EXAMINATION				
74.	Given below are two sta	tements : one is	s labelled as Assertion (A) and the other is labelled as Reason (R)				
	Assertion (A) :	Assertion (A) : I undergoes S 2 reaction faster than Cl						
	Reason (R) : Iodine is a better leaving group because of its large size							
	In the light of the above	In the light of the above statements, choose the correct answer from the options given below :						
	 (1) A is false but R is true (2) Both A and R are true and R is the correct explanation of A 							
	 (3) Both A and R are true but R is not the correct explanation of A (4) A is true but R is false 							
Δns.	(1) No the part to have A and R are true and R is the correct explanation of A							
Sol.	Both statements are co	rrect						
75.	The correct order of decreasing acidity of the following aliphatic acids is :							
	(1) HCOOH > $(CH_3)_3 CO$	(1) HCOOH > (CH ₂) ₂ CCOOH > (CH ₂) ₂ CHCOOH > CH ₂ COOH						
	(2) $(CH_2)_2$ CCOOH > $(CH_2)_2$ CHCOOH > CH_2COOH > HCOOH							
	(3) $CH_3COOH > (CH_3)_2$	CHCOOH > (C		4				
	(4) HCOOH > $CH_3COOH > (CH_3)_3CHCOOH > (CH_3)_3 CCOOH$							
Ans.	(4) HCOOH > $CH_2COOH > (CH_2)_2CHCOOH > (CH_2)_2 CCOOH$							
Sol.	Acidic strength order	- 3-2	2 - J-J					
	HCOOH > CH ₃ COOH >	(CH ₃) ₂ CHCOC	$OH > (CH_3)_3 CCOOH$					
76.	Which one of the follow	ing reactions d	oes NOT belong to "La	assaigne's test" ?				
	(1) $2CuO + \xrightarrow{\Delta} 2Cu + CO_2$ (2) Na + C + N $\xrightarrow{\Delta}$ NaCN							
	(3) 2Na + S $\xrightarrow{\Lambda}$ Na	₂ S						
	(4) Na + X \longrightarrow + N	aX						
Ans.	(1) 2CuO + \longrightarrow 2	2Cu + CO ₂						
Sol.	$2CuO + C \xrightarrow{\Delta} 2Cu$	+ CO ₂						
	This reaction is not relat	ed with lassain	gne test.					
77.	How many products (ir	cluding stereo	isomers) are expected	I from monochlorination of the followin				
	compound ?							
	CH – CH – CH,							
	H ₃ C							
	(1) 6	(2) 2	(3) 3	(4) 5				



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A Statement	NEET (UG) / JEE-MAIN /ADVANCED	(He	d On Sunday	4th May, 2025)	
80.	Higher yield of NO in					
	$N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$ can be obtained at					
	$[\Delta H \text{ of the reaction} = + 2$	180.7 kJ mol ⁻¹]				
	A. higher temperaturg					
	B. lower temperature					
	C. higher concentration of N_2					
	D. higher concentration	of O ₂				
	Choose the correct answer from the options given below :					
	(1) A, C, D only (2	2) A, D only	(3) B, C only	(4) B, C, D only		
Ans.	(1) A, C, D only					
Sol.	$N_2(g) + O_2(g) \longrightarrow 2NO(g) \Delta H = +180.7 \text{ KJ mol}$					
	\rightarrow endothermic reaction					
	(1) Higher temperaturg					
	(2) Higher concentration	of N ₂				
	(3) Higher concentration	of O ₂				
81.	Match List-I with List-II					
	List-I		List-II			
	A. XeO ₃		I. sp ³ d; linear			
	B. XeF ₂		II. sp ³ ; pyramidal			
	C. XeOF ₄		III. sp ³ d ³ ; distorted	loctahedral		
	D. XeF ₆		IV. sp^3d^2 ; square py	yramidal		
	Choose the correct answ	ver from the options	given below :			
	(1) A-IV, B-II, C-I, D-III		(2) A-II B-I, C-IV, D-	III		
	(3) A-II B-I, C-III, D-IV		(4) A-IV, B-II, C-III,	D-I		
Ans.	(2) A-II B-I, C-IV, D-1	II				
Sol.	$XeO_3 \rightarrow sp^3d$ lenear [3]	36 + 1 LP				
	$Xer_2 \rightarrow sp^{\circ}u$ lenear [2 $YeOE \rightarrow sp^{3}d^2 - square$	20 + 3 LP) .nvramidal [5 + 1 P				
	$XeE_{4} \rightarrow sp^{3}d^{3} - Distorted$	i octahedral				
82.	Match List - I with List - II					
	List-I (Example)		List-II (Type of s	olution)		
	A. Humidity		I. Solid in solid			
	B. Alloys		II. Liquids in gas			
	C. Amalgams		III. Solid in gas			
	D. Smoke		III. Liquid in solid			
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	Choose the correct answ	ver from the options given below :
	(1) A-III, B-II, C-I, D-IV	(2) A-II, B-IV, C-I, D-III
	(3) A-II, B-I, C-IV, D-III	(4) A-III, B-I, C-IV, D-II
Ans.	(3) A-II, B-I, C-IV, D-	III
Sol.	Humidity – Liquid in gas	
	Alloys – Solid in solid	
	Amalgams – Liquid in solid	1
	Smoke – Solid in gas	
83.	Enery and radius of first I	Bohr orbit of He ⁺ and Li ²⁺ are
	[Given $R_{H} = 2.18 \times 10^{-13}$	³ J, a ₀ = 52.9 pm]
	(1) $E_n(Li^{2+}) = -8.72 \times 1$	0 ⁻¹⁶ J;
	r _n (Li ²⁺) = 17.6 pm	
	$E_n (He^+) = -19.62 \times 10^{-1}$	¹⁶ J;
	r _n (He ⁺) = 17.6 pm	
	(2) $E_n (Li^{2+}) = -19.62 \times$	10 ⁻¹⁸ J;
	r _n (Li ²⁺) = 17.6 pm	
	$E_n (He^+) = -8.72 \times 10^{-1}$	⁸ J;
	r _n (He ⁺) = 26.4 pm	
	(3) $E_n(Li^{2+}) = -8.72 \times 10^{-10}$	0 ⁻¹⁸ J;
	r _n (Li ²⁺) = 26.4 pm	
	$E_n (He^+) = -19.62 \times 10^{-1}$	¹⁸ J;
	r _n (He ⁺) = 17.6 pm	
	(4) $E_n (Li^{2+}) = -19.62 \times$	10 ⁻¹⁶ J;
	r _n (Li ²⁺) = 17.6 pm	
	$E_n (He^+) = -8.72 \times 10^{-1}$	⁶ J;
	r _n (He ⁺) = 26.4 pm	
Ans.	(2) $E_n(Li^{2+}) = -19.62$	× 10 ⁻¹⁸ J;
	r _n (Li ²⁺) = 17.6 pm	
	E_{n} (He ⁺) = -8.72 × 10) ⁻¹⁸ J;
	r _n (He ⁺) = 26.4 pm	
Sol.	$r = .529 \times \frac{n^2}{Z} A^0 \qquad E$	$= -2.18 \times 10^{-18} \times \frac{z^2}{n^2}$ Joule
	n = 1	
	$E_{He^+} = .529 \times \frac{1}{2} A^0 E_{He^+}$	$_{\text{He}^+} = -2.18 \times 10^{-18} \times \frac{(2)^2}{(1)^2}$
Synta NEET (UG) / JEI	"Gyan To (Mob. :	wer" Near Shivbari Circle, Old Shivbari Road, Bikaner 8003094891, 8003094892 web.www.synthesis.org.in) Page - 17

	Sunthesis	NEET(l	JG)—2025 E	EXAMINATION			
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	$= .264 \text{ S A}^0$	$E_{\rm He^+} = -8.72 \times 10^{-1}$	⁸ S				
	= 26.4 PM						
	n = 1						
	$r_{Li^{+2}} = .529 \times \frac{1}{3} A^0$ E	$E_{\text{Li}^{+2}} = -2.18 \times 10^{-18}$	$^{3} \times \frac{(3)^{2}}{(1)^{2}}$				
	= 17.6 pm E	$E_{\text{Li}^{+2}} = -19.62 \times 10^{-10}$	¹⁸ J				
84.	Which among the followi	ing electronic configu	irations belong to main	group elements :			
	A. [Ne]3s ¹ B	3. [Ar]3d ³ 4s ²	C. [Kr]4d ¹⁰ 5s ² 5p ⁵				
	D. [Ar]3d ¹⁰ 4s ¹ E	. [Rn]5f ⁰ 6d ² 7s ²					
	Choose the correct answ	wer form the option	given below :				
	(1) A, C and D only (2) B and E only	(3) A and C only	(4) D and E only			
Ans.	(3) A and C only						
Sol.	s & p block element are r	main group element					
	(A) [Ne] $3s^1 \rightarrow s$ -block ele	ement					
	(B) [Ar] $3d^34s^2 \rightarrow d$ -block	k element					
	(C) [Kr] $4d^{10}5s^{2}5p^{5} \rightarrow p^{-1}$) [Kr]4d ¹⁰ 5s ² 5p ⁵ \rightarrow p-block element					
	(D) [Ar] $3d^{10}4s^1 \rightarrow d$ -bloc	ck element					
	$(E) [Rn]5f^0 6d^27s^2 \rightarrow f-b$	lock element					
85.	$C(s) + 2H_2(g) \rightarrow CH_4(g)$; $\Delta H = -74.8 \text{ kJ mol}^{-1}$	-1				
	Which of the following di	iagrams gives an acc	urate representation of	the above reaction ?			
	$[R \rightarrow reactants; P \rightarrow production P \rightarrow$	lucts]					
	(1) $(kJ \text{ mol}^{-1})$ $(kJ \text{ mol}^{-1})$ (m) $(m$	p 174.8 n progress	(2) $\begin{array}{c} \text{Energy} \\ (kJ \text{ mol}^{-1}) \\ \uparrow \\ \hline 74 \\ \hline 74 \\ \hline \\ \hline \\ \\ \hline \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $	4.8 P etion progress			
	(3) $(kJ \text{ mol}^{-1}) = \frac{R}{R}$	$\int \frac{P}{74.8}$	(4) $\begin{array}{c} \text{Energy} \\ (kJ \text{ mol}^{-1}) \\ \uparrow \\ \hline \\ \hline \\ \\ \hline \\ \\ \hline \\ \\ \\ \\ \\ \\ \\ \\$	$\frac{1}{P}$			

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87.	Identify the correct orde	s against the property mentioned				
	A. $H_2O > NH_3 > CHCl_3 - dipole moment$					
	B. XeF ₄ > XeO ₃ > XeF ₂ – number of lone pairs on central atom					
	C. O–H > C–H > N–O – bond length					
	D. N ₂ > O ₂ > H ₂ – bond enthalpy					
	Choose the correct answer from the options given below :					
	(1) B, C only (2	2) A, D only	(3) B, D only	(4) A, C only		
Ans.	(2) A, D only					
Sol.	(A) $H_2O > NH_3 > CHCl_3 - dipole moment$					
	(B) $\frac{XeF_2}{_{3\ell,p.}} > \frac{XeF_4}{_{2\ell,p.}} > \frac{XeO_3}{_{1\ell,p.}}$ – number of lone pairs on central atom					
	(D) $\frac{N_2}{(N=N)} > \frac{O_2}{(O=O)} > \frac{H_2}{(H-H)}$ – bond enthalpy					
88.	Total number of possible isomers (both structural as well as stereoisomers) of cyclic ethers of molecular					
	formula $C_4 H_8 O$ is :					
	(1) 11 (7	2) 6	(3) 8	(4) 10		
Ans.	(4) 10					
Sol.	$MF _ C_4H_3O \longrightarrow cyclic ether isomers.$					
	(A) (B) (C)	(D)			
			\prec			
	(E)	(F) (G)				
89.	structure (B), (D), (F) are optically active so mirror images also included in stereoisomerism. so total stereoisomers are. For the reaction A (g) $\rightarrow 2B(g)$, the backward reaction rate constant is higher than the forward reaction					
	rate constant by a factor of 2500, at 1000 K.					
	, [Given : R = 0.0831 L at	m mol ⁻¹ K ⁻¹]				
	K _b for the reaction at 1000 K is :					
	(1) 0.021 (2	2) 83.1	(3) 2.077 × 10 ⁵	(4) 0.033		
Ans.	(4) 0.033					
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	Suntherin	NEET(UG)–2025 EXAMINATION				
A Surviver of Research	NEET (UG) / JEE-MAIN /ADVANCED	(Hel	d On Sunday 4th May, 2025)			
Sol.	$A(g) \rightleftharpoons 2B(g)$	$\Delta(g) \rightleftharpoons 2B(g)$ $\Delta ng = +1$				
	$K_{b} = 2500 K_{F}$	$K_p = K_c (RT)^{\Delta ng}$				
	$K_{c} = \frac{K_{f}}{K_{b}}$					
	$K_{c} = \frac{K_{f}}{2500K_{f}}$	$K_{\rm p} = 4 \times 10^{-4} \ (.0831)$	× 1000) ¹			
	$K_{c} = 4 \times 10^{-4}$	K _p = .033				
90.	5 moles of liquid X and 2	f liquid X and 10 moles of liquid Y make a solution having a vapour pressures of pure X and Y				
	are 63 torr and 78 torr respectively. Whic of the following is true regarding the described solution :					
	(1) The solution has volume greater than the sum of individual volumes.					
	(2) The solution shows positive deviation					
	(3) The solution shows	solution shows negative deviation				
	(4) The solution is ideal					
Ans.	(3) The solution shows negative deviation					
Sol.	$P_{S} = P_{A} + P_{B} \rightarrow Rault's law$					
	$P_{S} = P_{X} + P_{Y}$					
	$P_{x} = X_{x} P_{x}^{0}$	$P_{x} = \frac{5}{15} \times 63$	P _x = 21			
	$P_{y} = X_{y} \; P_{y}^{\; 0}$	$P_{y} = \frac{10}{15} \times 78$	P _y = 52			
	$P_{s} = 21 + 52$					
	P _s = 73					
	$P_{Practical} < P_{Theortical}$	al < P _{Theortical}				
	Chave Negative deviation					

 \rightarrow Show Negative deviation

