JEE-Main-02-04-2025 (Memory Based)

[MORNING SHIFT]

Chemistry

Question: Which of the following is correct order of basic strength of amines in aqueous medium

Options:

(a) $CH_3NH_2 > (CH_3)_2NH > (CH_3)_3\ N > NH_3$

(b) $(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N > NH_3$

(c) $CH_3NH_2 > NH_3 > (CH_3)_2NH > (CH_3)_3N$

(d) $(CH_3)_3N > (CH_3)_2NH > CH_3NH_2 > NH_3$

Answer: (b)

Question: Which of the following statement(s) is correct is/are for the adiabatic process?

A. Molar heat capacity is zero.

B. Molar heat capacity is infinite.

C. Work done on gas is equal to increase in internal energy

D. The increase in temperature results in decrease in internal energy

Options:

(a) A and C only

(b) B and C only

(c) A and D only

(d) C & D only

Answer: (a)

Question: In group 17, which property does not follow a regular trend?

Options:

(a) Electron affinity

(b) Ionisation energy

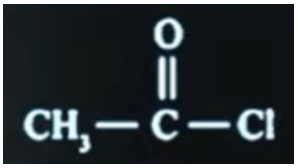
(c) Covalent radii

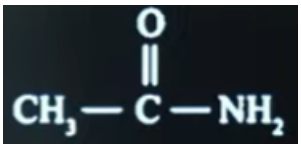
(d) Ionic radii

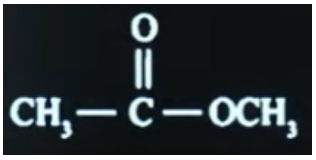
Answer (a)

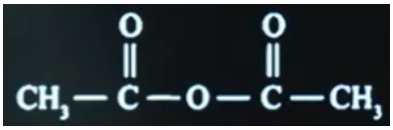
Question: Which of the following molecules hydrolysis fast

Options:

(a) 

(b) 

(c) 

(d) 

Answer: (a)

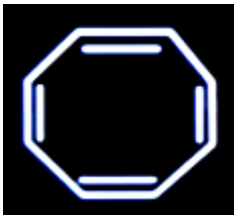
Question: Which is correct option about radius of nth orbit in hydrogen
Options:
(a) Radius of 3rd orbit is 9 times of radius 1st orbit
(b) Radius of 4th orbit is 4 times of radius of 1st orbit
(c) Radius of 8th orbit is 4 times of radius of 2nd orbit
(d) Radius of 6th orbit is 2 times of radius of 3rd orbit
Answer: (a)

Question: Among the given compounds
NH_3, NF_3, ClF_3, XeF_2, SO_2
Find the hybridisation of the compound which is polar highest number of lone pairs on central atom.
Options:
(a) sp^3d
(b) sp^3d^2
(c) sp^3d^3
(d) sp^3d^1
Answer: (a)

Question: Which of the following is antiaromatic?
Options:
(a) 

(b) 

(c) 

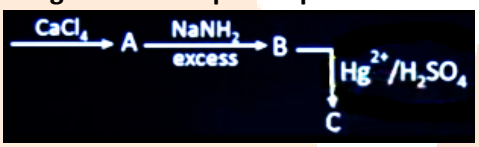
(d) 

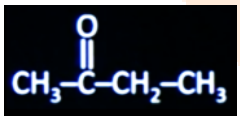
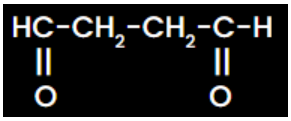
Answer: (b)

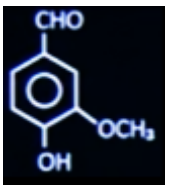
Question: Identify correct statement is:
Options:
(a) All Natural occurring amino acid are optically active
(b) All Natal occurring amino acid except Glycine have one chiral center.
(c) All Natural occurring amino acid except proline have primary amine Functional group
(d) All Natural occurring amino acid are neutral amino acid.
Answer: (c)

Question: What is the ratio of radius of n^{th} orbit in H, He^{+} and Li^{+2}? (Assume Bohr model is applicable)
Options:
(a) 6 : 3 : 1
(b) 6 : 3 : 2
(c) 3 : 6 : 2
(d) 4 : 3 : 2
Answer: (b)

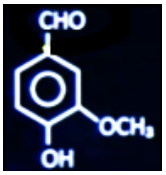
Question: In following reaction sequence product C is



But-2-ene + Br_2
Identity C,
Options:
(a) 
(b) CH_3-CH_2-CH_2-CHO
(c) CH_3-CH_2-CH_2-CH_2-OH
(d) 
Answer: (a)

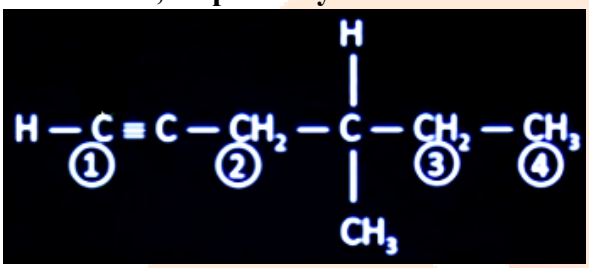
Question: Statement-I: 

reacts with NaOH to give a compound which gives positive Tollen's test.

Statement-II: 

react with NaOH to give self-aldol condensation reaction.
In the light of above statements, choose the correct options.
Options:
(a) Statement-I and Statement-II both are correct
(b) Statement-I is correct and Statement-II is incorrect
(c) Statement-II is correct and Statement-I is incorrect
(d) Statement-I and Statement-II both are incorrect
Answer: (d)

Question: Which of the following carbon atom, forms the least stable and most stable free radical, respectively.



Options:
(a) 1, 3
(b) 1, 4
(c) 1, 2
(d) 3, 4
Answer: (a)

Question: Consider the following statements
Statement-I: Metallic radius of AI is less than that of Ga.
Statement-II: Ionic radius of Al^{3+} is less than that of Ga^{3+}
Options:
(a) Statement-I and Statement-II both correct
(b) Statement-I and Statement-II both incorrect
(c) Statement-I is incorrect Statement-II is correct
(d) Statement-I and Statement-II, both one incorrect
Answer: (c)

Question: Given below are two statements.
Statement-I: All naturally occurring amino acids are optically active except glycine.
Statement-II: All amino acids are optically active. In light of the above statement, choose the most appropriate option
Options:
(a) Statement-I is true, Statement-II is false
(b) Both Statement-I and Statement-II are true
(c) Both Statement-I and statement-II are false
(d) Statement-I is false while statement-II is true
Answer: (a)

Question: In the complex $[M(CN_6)]^{4-}$. If M is Mn, Fe, Co calculate total number of electrons in e_g orbitals?
Options:

Answer: (1)

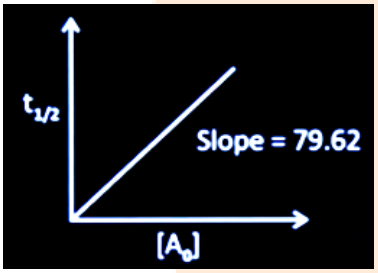
Question: Vapour pressure of pure liquid A is 200 mm Hg .
If 1 mol of A and 3 mol of B are mixed. Assuming solution to be ideal, find the vapour pressure of pure liquid 'B', if total pressure of solution is 500 mm Hg

Answer: (600)

Question: 100 g $CaCO_3$ when reacted with 0.19 mole of HCl then the moles of $CaCl_2$ formed is $P \times 10^{-3}$ mol.
Find P?

Answer: (95)

Question: In the following graph between $t_{1/2}$ and initial concentration $[A_0]$. If slope of the graph is 79.62 M^{-1} min. and initial concentration si 2.5 M. Find the concentration of A after 10 min



Answer: (2)