

JEE-Main-25-07-2022-Shift-1 (Memory Based)

Chemistry

Question: An interhalogen compound of Bromine reacts with excess of fluorine to form?

Options:

- (a) BrF_5
- (b) BrF
- (c) BrF_3
- (d) None of these

Answer: (a)

Solution: $\text{Br}_2 + 5\text{F}_2 \rightarrow 2\text{BrF}_5$
(excess)

Question: Which of the following structure of protein does not change on denaturation?

Options:

- (a) Primary
- (b) Secondary
- (c) Tertiary
- (d) Quaternary

Answer: (a)

Solution: Chemically denaturation does not change the primary structure of proteins.

Question: Which one of the following is not present in photochemical smog?

Options:

- (a) NO
- (b) NO_2
- (c) HCHO
- (d) SO_2

Answer: (d)

Solution: SO_2 is not present in photochemical smog

Question: Statement-I: KHSO_4 dehydrates glycerol to form acrolein.

Statement-II: Acrolein has a fruity smell and can be used to detect glycerol.

Options:

- (a) Both Statement I and Statement II are correct.
- (b) Both Statement I and Statement II are incorrect.
- (c) Statement I is correct but Statement II is incorrect.
- (d) Statement I is incorrect but Statement II is correct.

Answer: (c)

Solution: Acrolein is a colourless, yellow liquid with a pungent suffocating odour. Statement-I is true, statement-II is false.

Question: Monomer of melamine?

Options:

- (a) Formaldehyde

- (b) Caprolactum
- (c) Styrene
- (d) Acrylonitrile

Answer: (a)

Solution: Monomer of melamine is formaldehyde.

Question: The correct order of density of s-Block elements

Options:

- (a) $\text{Li} < \text{Na} < \text{Rb} < \text{K} < \text{Cs}$
- (b) $\text{Cs} < \text{Rb} < \text{K} < \text{Na} < \text{Li}$
- (c) $\text{Cs} < \text{Rb} < \text{Na} < \text{K} < \text{Li}$
- (d) $\text{Li} < \text{K} < \text{Na} < \text{Rb} < \text{Cs}$

Answer: (d)

Solution: On moving down in a group, density increase but the density of K is somewhat lesser than Na.

Thus, the order of density is $\text{Li} < \text{K} < \text{Na} < \text{Rb} < \text{Cs}$

Question: Drugs that inhibits natural functions

Options:

- (a) Agonist
- (b) Antagonist
- (c) Allosteric
- (d) Anti Histamines

Answer: (b)

Solution: Antagonist inhibits natural functions

Question: IUPAC name of element with atomic no 103 is

Options:

- (a) Unnilunium
- (b) Unnilbium
- (c) Unnitirium
- (d) Unnilqadium

Answer: (c)

Solution: Unnitirium

Question: Which absorbs energy of minimum wavelength?

Options:

- (a) $[\text{Co}(\text{NH}_3)_6]^{+3}$
- (b) $[\text{Co}(\text{CN})_6]^{3-}$
- (c) $[\text{Co}(\text{NH}_3)_5(\text{H}_2\text{O})]^{3+}$
- (d) $[\text{Co}(\text{CN})_6]^{3-}$ and $[\text{Co}(\text{NH}_3)_5(\text{H}_2\text{O})]^{3+}$

Answer: (b)

Solution: $\text{Wavelength} \propto \frac{1}{\text{stability of complex}}$

In all the complexes Co is present in +3 state and among the given ligands CN^- is the strongest ligand.

Hence, $[\text{Co}(\text{CN})_6]^{3-}$ is most stable, Thus it absorbs light of minimum wavelength.

Question: What is the name of element having electronic configuration $[\text{Rn}]5f^{14}7s^27p^1$

Options:

- (a) No
- (b) Rf
- (c) Lr
- (d) Lu

Answer: (c)

Solution: Lawrenium (Lr) has electronic configuration $[\text{Rn}]5f^{14}7s^27p^1$

Question: Which of the following sets of quantum numbers not possible?

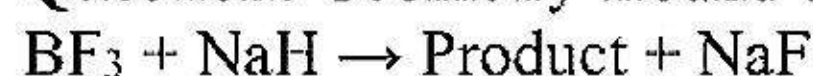
Options:

- (a) $n = 1, l = 0, m_l = 0, m_s = -\frac{1}{2}$
- (b) $n = 1, l = 1, m_l = 0, m_s = +\frac{1}{2}$
- (c) $n = 2, l = 1, m_l = 0, m_s = +\frac{1}{2}$
- (d) $n = 3, l = 1, m_l = 0, m_s = +\frac{1}{2}$

Answer: (b)

Solution: $n = 1, l = 1, m_l = 0, m_s = +\frac{1}{2}$ is the wrong set of quantum numbers as maximum l value should be equal to $n-1$ and it cannot be equal to n

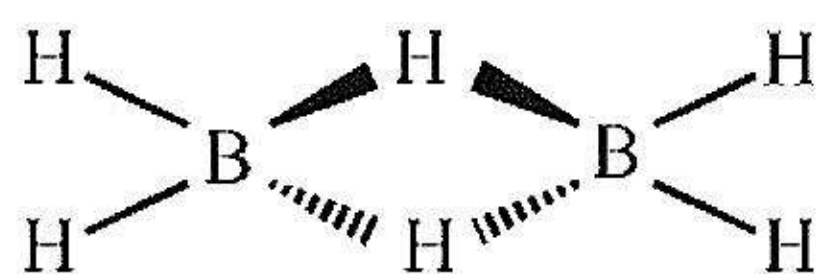
Question: Geometry around borane in the product



Options:

- (a) Trigonal planar
- (b) Tetrahedral
- (c) Pyramidal
- (d) Planar

Answer: (b)



(Tetrahedral)

Question: The pK_a value of weak acid HA is 4.8 and pK_b of weak base BOH is 4.78. The pH of corresponding salt BA will be

Options:

- (a) 8.58
- (b) 7.01
- (c) 4.79
- (d) 9.22

Answer: (b)

$$\text{Solution: } \text{pH} = 7 + \left(\frac{\text{pK}_a - \text{pK}_b}{2} \right) = 7 + \left(\frac{0.02}{2} \right) = 7.01$$

Question: Which of the following comes out as slag in metallurgy of copper?

Options:

- (a) FeO
- (b) Al_2O_3
- (c) ZnO
- (d) NiO

Answer: (a)

Solution: $\text{FeO} + \text{SiO}_2 \rightarrow \text{FeSiO}_3$
(Slag)

Question: Total number of diamagnetic species is/are

N_2 , N_2^+ , N_2^- , N_2^{2+} , O_2 , O_2^+ , O_2^- , O_2^{2-}

Answer: 2.00

Solution: N_2 and O_2^{2-} are diamagnetic species

Question: How many compounds have same degree of unsaturation?

- A) $\text{CH}_3\text{-CH=CH-C}\equiv\text{N}$
- B) $\text{CH}_3\text{-N=CH-C}\equiv\text{CH}$
- C) $\text{CH}\equiv\text{C-NH-CH=CH}_2$
- D) $\text{CH}_2=\text{CH-CH}_2\text{-C}\equiv\text{N}$

Answer: 4.00

Solution: Degree of unsaturation = Number of π bonds + Number of rings

$\text{CH}_3\text{CH=CH-C}\equiv\text{N} = 2 + 1 = 3$

$\text{CH}_3\text{-N=CH-C}\equiv\text{CH} = 2 + 1 = 3$

$\text{CH}\equiv\text{C-NH-CH=CH}_2 = 2 + 1 = 3$

$\text{CH}_2=\text{CH-CH}_2\text{-C}\equiv\text{N} = 2 + 1 = 3$

All the compounds have 3 as degree of unsaturation