JEE-Main-22-01-2026 (Memory Based)
[MORNING SHIFT]
Chemistry

Question: Arrange the given metal ions in number in increasing order of unpaired electrons in low spin complex formed by Mn^{3+}, Cr^{3+}, Fe^{3+}, Co^{3+}
Options:
(a) $Co^{3+} < Fe^{3+} < Mn^{3+} < Cr^{3+}$
(b) $Co^{3+} < Mn^{3+} < Fe^{3+} < Cr^{3+}$
(c) $Cr^{3+} < Mn^{3+} < Cr^{3+} < Fe^{3+}$
(d) $Cr^{3+} < Mn^{3+} < Co^{3+} < Fe^{3+}$
Answer: (a)

Question: Match the following and choose the correct option.

List- I	List-II
a) $[Ag(NH_3)_2]^+$	i) Fehling's solution
b) Zn-Hg/HCl	ii) Clemmenson's reduction
c) NH_2 - NH_2/KOH	iii) Tollen's reagent
d) Cu^{2+}/OH^-	iv) Wolff-Kishner reduction

Options:
(a) a(i), b(ii), c(iii), d(iv)
(b) a(iv), b(iii), c(ii), d(i)
(c) a(iii), b(ii), c(iv), d(i)
(d) a(i), b(ii), c(iv), d(iii)
Answer: (c)

Question: Find the energy to excite electron from first Bohr orbit of hydrogen atom to 2^{nd} Bohr's orbit. (in eV)
Options:
(a) 10.2 eV
(b) 20.2 eV
(c) 15.1 eV
(d) 13.5 eV
Answer: (a)

Question: Statement-I: Sucrose is dextrorotatory and upon hydrolysis it becomes laevorotatory.

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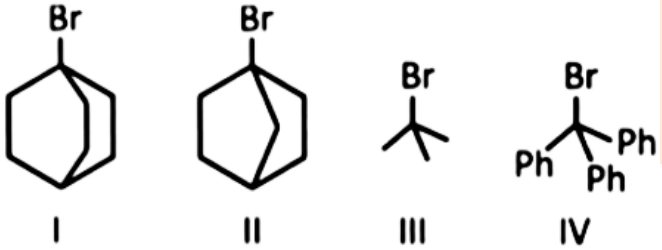
Statement-II: Sucrose on hydrolysis gives glucose and fructose such that laevorotation of glucose is more than dextrorotation of fructose.
Options:
(a) Both Statement-I and Statement-II are correct
(b) Both Statement-I and Statement-II are incorrect
(c) Statement-I is correct, Statement-II is incorrect
(d) Statement-II is correct, Statement-I is incorrect
Answer: (c)

Question: Which of the following is the correct order of the reactivity of given nucleophiles when treated with CH_3Br in methanol?
F^-, I^-, $C_2H_5O^-$, $C_6H_5O^-$
Options:
(a) $I^- > C_2H_5O^- > C_6H_5O^- > F^-$
(b) $I^- > F^- > C_2H_5O^- > C_6H_5O^-$
(c) $I^- > C_2H_5O^- > F^- > C_6H_5O^-$
(d) $C_6H_5O^- > F^- > I^- > C_2H_5O^-$
Answer: (a)

Question: Reactivity of following on the basis of S_N1 mechanism.



Options:
(a) IV > III > I > II
(b) II > IV > II > I
(c) III > IV > I > II
(d) IV > III > II > I
Answer: (a)

Question: Given below are two statements.
Statement-I: HX bond length is higher in HCl than HF.
Statement-II: The lowest boiling point in hydride of group 15 element is having covalency 4.
Options:
(a) Both Statement-I and Statement-II is correct
(b) Both Statement-I and Statement-II is incorrect
(c) Statement-I is correct but statement-II is incorrect
(d) Statement-I is incorrect but statement-II is correct
Answer: (c)

Question: A compound 'A' with molecular formula $C_9H_{11}NO$ reacts with Br_2/NaOH to give (X). (X) on reaction with $NaNO_2$ in dil. HCl gives compounds (Y). When (Y) is treated with CuCN, followed by hydrolysis gives (Z). The compound (A) on hydrolysis also gives compound (Z). Identify compound (A)

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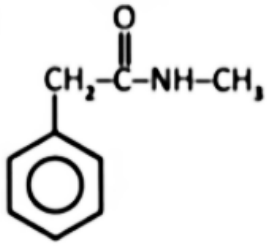
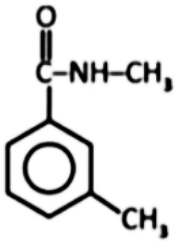
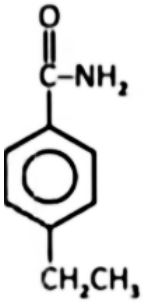
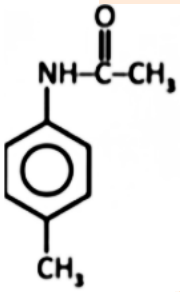
Options:

(a) 

(b) 

(c) 

(d) 

Answer: (c)

Question: Which of the following statements is correct regarding the nature and directive influence of -NO_2 group in nitration of benzene.

Options:

(a) It is an activating group and ortho/para director

(b) It is a deactivating group and ortho/para director

(c) It is a deactivating group and meta director

(d) It is an activating group and meta director

Answer: (c)

Question: Consider the following sequence of reaction and identify A, B and C respectively.

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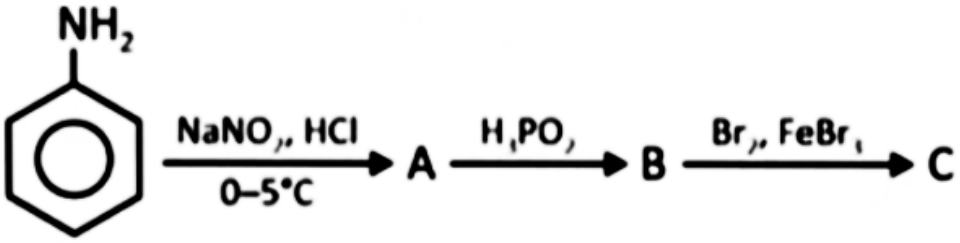
Vedantu



Options:
(a) C_6H_5OH, C_6H_6, $C_6H_4Br_2$
(b) $C_6H_5N_2{}^+Cl^-$, C_6H_6, C_6H_5Br
(c) $C_6H_5NO_2$, C_6H_5OH, C_6H_4Br
(d) C_6H_5Cl, C_6H_5OH, C_6H_6
Answer: (b)

Question: Statement-I: Ortho & Para nitro phenol can be differentiated by steam distillation.
Statement-II: Glycerol is separated from spent lie by distillation under reduced pressure
Statement-III: Chromatography separation based on differential affinities of components for a Stationary phase.
Statement IV: Aniline is commonly separated from a mixture of water by crystallization.
Select correct options
Options:
(a) Only I & IV
(b) Only I, II & III
(c) Only I, III
(d) All of these
Answer: (b)

Question: Given below are two statements
Statement-: K_H is constant with change in concentration of gas till solution is dilute at given temperature.
Statement-II: According to Henry's Law, partial pressure of gas in vapour phase is inversely proportional to mole fraction of gas in solution.
Options:
(a) Both Statement-I and Statement-II are correct
(b) Both Statement-I and Statement-II are incorrect
(c) Statement-I is correct, Statement-II is incorrect
(d) Statement-I is incorrect and Statement-II is correct
Answer: (c)

Question: Consider a first order reaction:
A → Products
3 different solutions are taken rate of reaction
Solution 1: 100 mL 10M 'A' - r_1
Solution 2: 200 mL 10M 'A' - r_2
Solution 3: 100 mL 10M 'A' + 100mL water - r_3
The correct order of the rate of reactions is,
Options:
(a) $r_1 = r_2 = r_3$

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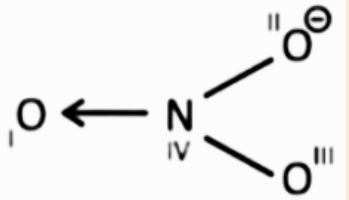
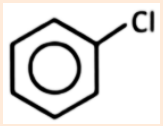
(b) $r_1 = r_2 < r_3$
(c) $r_1 = r_2 > r_3$
(d) $r_1 < r_2 < r_3$
Answer: (c)

Question: Bohr's radius of H-atom is 2.12×10^{-10} m. Calculate the energy at this level.
Options:
(a) -5.44×10^{-19} J
(b) -2.176×10^{-18} J
(c) -54.4×10^{-19} J
(d) -2.3×10^{-19} J
Answer: (a)

Question: Find the formal charge of N^{IV} *and* O^{I}, O^{II}, O^{III}

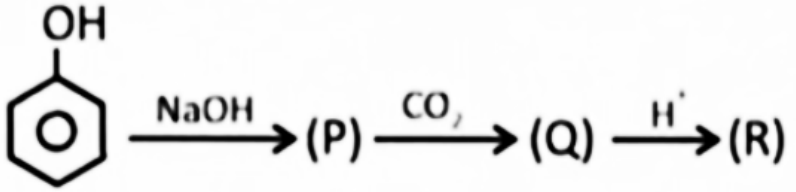


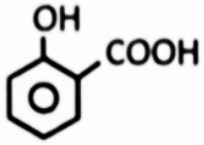
Options:
(a) 0, +1, -1, +2
(b) +1, -1, -1, 0
(c) -1, 0, +2, +1
(d) +1, -1, 0, -1
Answer: (b)

Question: For 

, the incorrect statement is, 'P'
Options:
(a) 'P' is less reactive than benzyl chloride towards nucleophilic substitution reaction.
(b) In 'P' C-Cl bond has partial double bond character
(c) 'Cl' is an ortho-para directing group towards electrophilic aromatic substitution
(d) 'P' can undergo nucleophilic substitution reaction at normal conditions
Answer: (d)

Question: In the following reaction sequence, identify compound (R)



Options:
(a) 

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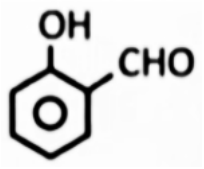
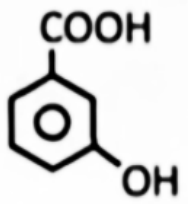
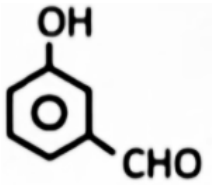
(b) 

(c) 

(d) 

Answer: (a)

Question: Which of the following statement is correct regarding element having atomic number 79.
Options:
(a) It's first ionisation enthalpy is maximum in its group
(b) It's first ionisation enthalpy is minimum in its group
(c) It belongs to group 10 of periodic table
(d) It belongs to 5th period of periodic table
Answer: (a)

Question: An element from 1st transition series and another element of 3rd transition series (same group) do not liberate H_2 gas from dilute acids like HCl. Both form halides. The hybridisation state of metal ion halide respectively are
Options:
(a) Both sp^3
(b) Both dsp^2
(c) sp^3 and dsp^2
(d) dsp^2 and sp^3
Answer: (c)

Question: Sodium extract of organic compound of 0.1 g is treated with chlorine water and CCl_4 which dissolves in organic solvent produce a violet colour upon treatment with $AgNO_3$ a yellow ppt of 0.12 g is produce. Calculate the percentage of Halide in organic compound.
Options:
(a) 65
(b) 91
(c) 34
(d) 80
Answer: (a)

Question: For the reaction given below at 25°C

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$A_2 \rightleftharpoons 2A$
Find $\ln K_p$
Given $(\Delta G°_f)_A$ = - 50.384 KJ/mol
Given $\left(\Delta G_f^o\right)A_2$ = - 100 KJ/mol
Options:
(a) 0.43
(b) 0.23
(c) 0.31
(d) 0.53
Answer: (c)

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