JEE-Main-28-01-2025 (Memory Based)
[EVENING SHIFT]
Chemistry

Question: Consider the following oxides,
V_2O_3, V_2O_4 and V_2O_5
Change in oxidation state of vanadium when amphoteric oxide reacts with acids to form VO_4^+ is
Options:
(a) 1
(b) 2
(c) 3
(d) 4
Answer: (b)

Question: Bohr's model is applicable for single electron atom of atomic number Z. Dependency of frequency of rotation of electron in n^{th} principal quantum number is proportional to
Options:
(a) Z/n^2
(b) Z^2/n^3
(c) n^3/Z
(d) Z/n
Answer: (b)

Question: Which has maximum oxidizing power among the following
Options:
(a) VO_2^+
(b) $Cr_2O_7^{2-}$
(c) MnO_4^-
(d) TiO_2
Answer: (c)

Options: Calculate the spin magnetic moment of Mn_2O_3
(a) a = $\sqrt{24}$
(b) b = $\sqrt{36}$
(c) c = $\sqrt{34}$
(d) d = $\sqrt{20}$
Answer: (a)

Question: Which of the following compound(s) is/are yellow in colour?
(a) CdS, (b) PbS, (c) Cus, (d) ZnS (Cold), (e) $PbCrO_4$
Choose the correct answer from the options given below:
Options:
(a) (a), (c) and (e) only
(b) (a) and (e) only
(c) (b) and (d) only
(d) (a), (b) and (e) only

Answer: (b)

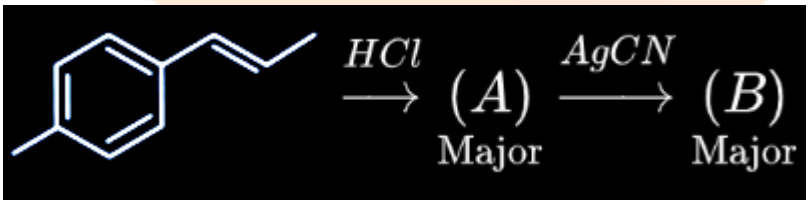
Question: $CH_3 - C\equiv CH \xrightarrow[H_2]{Pd/C} (A) \xrightarrow[(ii)Zn, H_2O]{(i)O_3} (B) + (C)$

Options:
(a) B = CH3CHO
C = HCHO
(b) B = CH3CHO
C = HCOOH
(c) B=CH3COCH3
C= HCHO
(d) B ⇒ HCHO
C ⇒ CH_3COOH
Answer: (a)

Question: The correct order of energy of the following subshell is
1s 2s 3p 3d
Options:
(a) 1s < 2s < 3d < 3p
(b) 2s < 1s < 3p < 3d
(c) 1s < 3p < 2s < 3d
(d) 1s < 2s < 3p < 3d
Answer: (d)

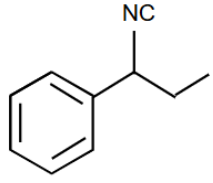
Question: Which has maximum oxidizing power among the following.
Options:
(a) VO_2^-
(b) $Cr_2O_7^{2-}$
(c) MnO_4^-
(d) TiO_2
Answer: (c)

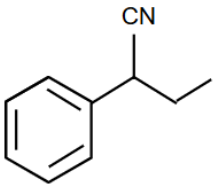
Question:

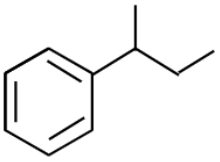


Options:

(a)



(b) 

(c) 

(d) None of these

Answer: (a)

Question: Which of the group - 15 element forms dπ - dπ Bond and strongest basic hydride?

Options:

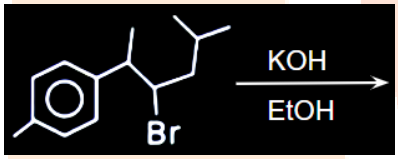
(a) Z = 7

(b) Z = 15

(c) Z = 33

(d) Z = 51

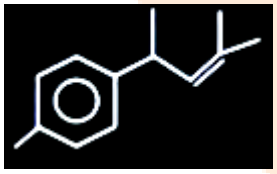
Answer: (b)

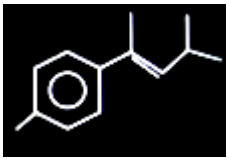
Question: 

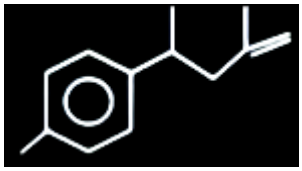
identify major

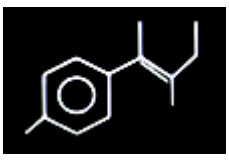
Product

Options:

(a) 

(b) 

(c) 

(d) 

Answer: (a)

Question: Which of the following complex is paramagnetic
Options:
(a) $[NiCl_4]^{2-}$
(b) $[Ni(CO)_4]$
(c) $[Ni(CN)_4]^{2-}$
(d) $[Fe(CO)_5]$
Answer: (a)

Question: 30 gm HNO3 is added to a solution to prepare 75% w/w solution having density 1.25 g/mL. Volume of solution is
Options:
(a) 32 mL
(b) 48 mL
(c) 36 mL
(d) 28 mL
Answer: (a)

Question: S-I 

are ring chain isomers

S-II 

are functional isomers
Options:
(a) Both S-I and S-II are correct Statements
(b) S-I is correct and S-II is not correct
(c) S-I wrong statement and S-II is correct statement
(d) Both Statements are correct
Answer: (a)

Question: For an elementary reaction
$A + B \rightarrow C + D$
When volume becomes ⅓ rd, rate of reaction becomes
Options:
(a) 8 times
(b) 9 times
(c) 6 times
(d) 2 times
Answer: (b)

Question: Match the following List-I with List-II

	List - I		**List-II**
A	**$[COF_6]^{3-}$**	**i**	**sp^3d^2**
B	**$[CO(NH_3)_6]^{3+}$**	**ii**	**d^2sp^3**

C	**$[NiCl_4]^{2-}$**	**iii**	**sp^3**
D	**$[Ni(CN)_4]^{2-}$**	**iv**	**dsp^2**

Choose the correct answer from the options given below:
Options:
(a) A-i, B-II, C-iii, D-iv
(b) A-ii, B-i, C-iv, D-iii
(c) A-i, B-ii, C-iv, D-iii
(d) A-ii, B-i, C-iii, D-iv
Answer: (a)

Question: The correct name of I & II in the following process is:
$Solid \rightarrow^{I} Vapours \rightarrow^{II} Solid$

Options:
(a) I → Sublimation
II → Vaporisation
(b) I → Sublimation
II → Decomposition
(c) I → Sublimation
II → Deposition
(d) I → Deposition
II → Sublimation
Answer: (c)

Question: Consider the following statements:
Statement I: In law of octaves, elements were arranged in increasing order of their atomic numbers.
Statement II: Lothar Meyer, plotted the physical properties against atomic weight
Choose the correct answer from the options given below:
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: (d)

Question: Consider the following sequence of reaction
$C_6H_{12} \rightarrow^{Se/\Delta} A \rightarrow_{AlC_3}^{CH_3-Cl} B \rightarrow_{H_3O^+}^{CrO_2Cl_2} C$
Choose the correct option about major product
Options:
(a) 'C' gives Fehling's solution test
(b) 'C' can be prepared by reacting PhMgBr with CO_2
(c) 'C' can give Tollen's test
(d) 'C' can give effervescence with $NaHCO_3$
Answer: (c)

Question: Which of the following biomolecules doesn't contain C_1 — C_4 glycosidic linkage

Options:

(a) Amylopectin

(b) Maltose

(c) Lactose

(d) Sucrose

Answer: (d)

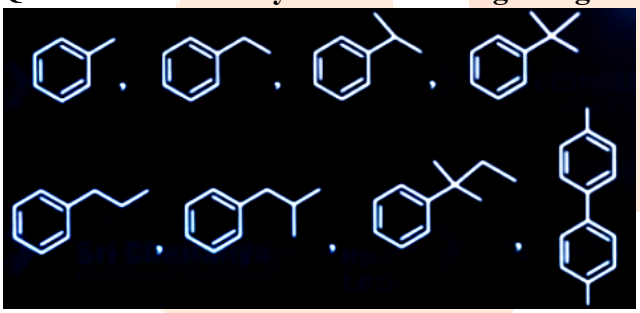
Question: No. of Paramagnetic species among the following is O_2, O_2^+, O_2^-, NO_2, NO, CO

Answer: (5)

Question: How many of the following molecules are polar?
CH_4, CCl_4 CH_2Cl_2, H_2O, NH_3, H_2O_2, O_2F_2

Answer: (5)

Question: How many of the following will give Benzoic acid on Oxidation with $KMnO_4$?



Answer: (6)