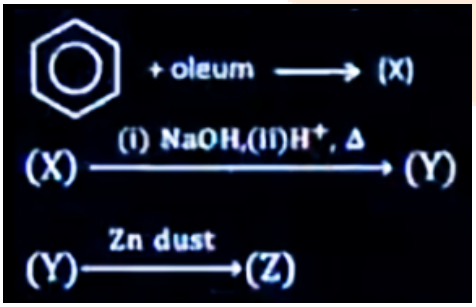
JEE-Main-04-04-2025 (Memory Based)
[MORNING SHIFT]
Chemistry

Question: Which of the following is the ratio of 5th Bohr orbit (r_5) of He^+ & Li^{2+} ?
Options:
(a) 2/3
(b) 3/2
(c) 9/4
(d) 4/9
Answer: (b)

Question: Which of the following pair of ions have equal number of unpaired electrons
Options:
(a) V^{2+} and Ni^{2+}
(b) Cr^{2+} and Mn^{2+}
(c) Fe^{2+} and Sc^{2+}
(d) Mn^{3+} and Fe^{2+}
Answer: (d)

Question: Incorrect order of atomic radius is
Options:
(a) B < Al
(b) In < Tl
(c) In < Tl
(d) Ga < In
Answer: (c)

Question: In the reaction sequence:

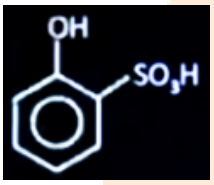


The compound (Z) is
Options:

(a) 

(b) 

(c) 

(d) 

Answer: (c)

Question: One mole of an ideal gas expands from 10 dm^3 to 20 dm^3 through isothermal reversible process. Find ΔU, q & w

Options:

(a) $\Delta U = 0, q = 0, w = 0$

(b) $\Delta U = 0, q \neq 0, w \neq 0$

(c) $\Delta U \neq 0, q = 0, w \neq 0$

(d) $\Delta U \neq 0, q \neq 0, w = 0$

Answer: (b)

Question: Observe the following diagram

For reverse osmosis, which of the following can be used for porous membrane?

Options:

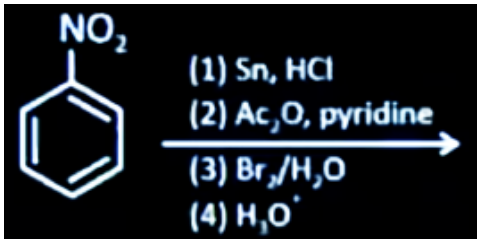
(a) Cellulose acetate

(b) Porous silicate

(c) Silicone

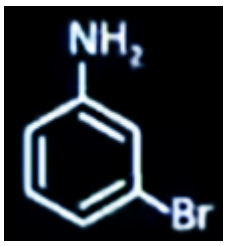
(d) Glass membrane

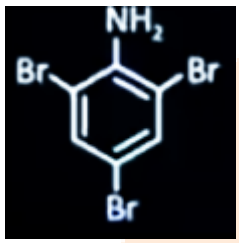
Answer: (a)

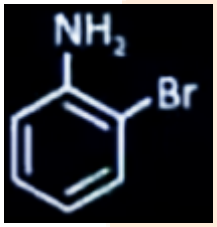
Question: 

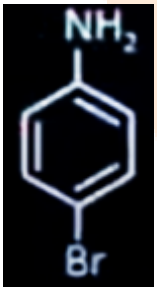
P (major product)

Options:

(a) 

(b) 

(c) 

(d) 

Answer: (d)

Question: Which of the following is correct option regarding 1s orbital

Options:

(a) It is symmetrical
(b) It is non-symmetrical
(c) It is directional
(d) It has two radial nodes

Answer: (a)

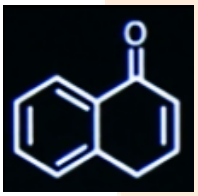
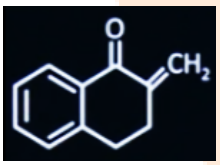
Question: Total number of stereoisomers possible for complexes $[Cr(Cl_3)(Py)_3]$ and $[CrCl_2(C_2O_4)_2]$ respectively are

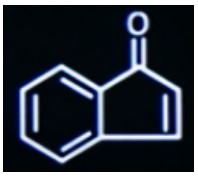
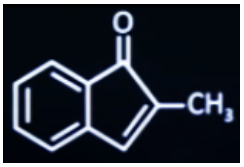
Options:

(a) 2, 3

(b) 3, 2
(c) 3, 3
(d) 2, 2
Answer: (a)

Question: In lead storage battery during charging oxidation state of lead show changes
At anode from x_1 to y_1
At cathode from x_2 to y_2
Find value of x_1, y_1, x_2 y_2
Options:
(a) $x_1 = +2$, $y_1 = 0$
$x_2 = +2$, $y_2 = +4$
(b) $x_1 = +4$, $y_1 = 0$
$x_2 = +2$, $y_2 = +4$
(c) $x_1 = 0$, $y_1 = +2$
$x_2 = +4$, $y_2 = +2$
(d) $x_1 = +2$, $y_1 = 0$
$x_2 = +4$, $y_2 = 0$
Answer: (a)

Question: Which of the following compound is not a product of intramolecular aldol condensation reaction?
Options:
(a) 
(b) 

(c) 
(d) 

Answer: (b)

Question: If the rate of a reaction is given by $R_1 = k[A]^m [B]^n$, then what will be the ratio R_2/R_1 when the concentration of A is doubled (2A) and the concentration of B is halved (B/2)?
Options:
(a) 2^{m+n}

(b) 2^{n-m}
(c) 2^{m-n}
(d) 1
Answer: (c)

Question: The complex ion having crystal field stabilization energy is zero and value of spin only magnetic moment is 5.92 BM.
Options:
(a) $[FeF_6]^{4-}$
(b) $[Mn(SCN)_6]^{4-}$
(c) $[Co(NH_3)_6]^{3+}$
(d) $[Fe(CN)_6]^{3-}$
Answer: (b)

Question: Statement-I: (A) C_2H_5 — CH = $\overset{2}{C}H-\overset{1}{C}HO$ has higher dipole moment than (B) C_2H_5 — $\overset{2}{C}H_2-\overset{1}{C}HO$.
Statement-II: C1 — C2 bond length in (A) is longer than (B)
In the light of above statements, choose the correct option:
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 incorrect but Statement-II is correct
Answer: (c)

Question: In following sequence of reaction. A is converted to D
$C_3H_6O \xrightarrow{H_2/Pd} B \xrightarrow{HBr} C \xrightarrow{Mg/Ether} D$
D is treated with A followed by hydrolysis to give 2,3-dimethyl-butan-2-ol. Then identify A, B, C.
Options:
(a) A = CH_3COCH_3, B = CH_3 - $CH(OH)CH_3$, C = CH_3 -$CH(Br)CH_3$
(b) A = CH_3CH_2CHO, B = $CH_3CH_2CH_2OH$, C = $CH_3CH_2CH_2Br$
(c) A = CH_2 = CH - CH_2OH, B = $CH_3CH_2CH_2OH$, C = $CH_3CH_2CH_2Br$
(d) A Cyclopropane, B-Cyclopropanone, C-bromo propane
Answer: (a)

Question: In the following, the number of paramagnetic molecules are: O_2, N_2, F_2, B_2, Cl_2
Options:

Answer: (2)

Question: 0.01 M HX ($K_a = 4 \times 10^{-10}$) is diluted till the solution has pH = 6. If the new concentration is $x \times 10^{-4}$ M then find x.
Options:

Answer: (25)