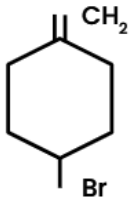
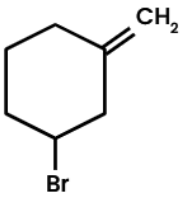
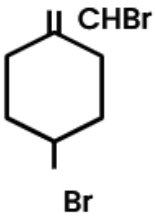
JEE-Main-29-01-2024 (Memory Based)
[EVENING SHIFT]

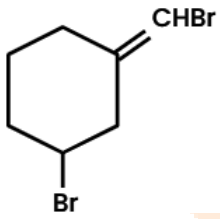
Chemistry

Question: Which can show GI.
Options:

(a) 

(b) 

(c) 

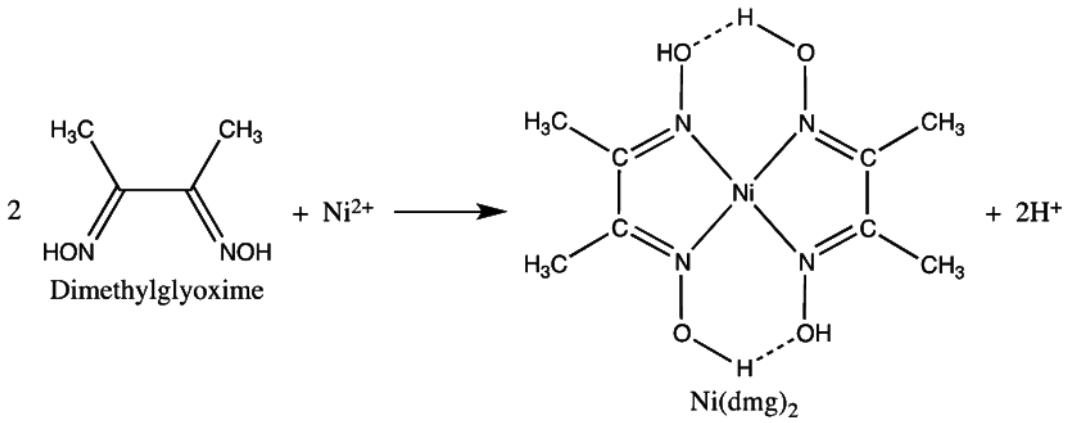
(d) 

Answer: (d)
Solution:

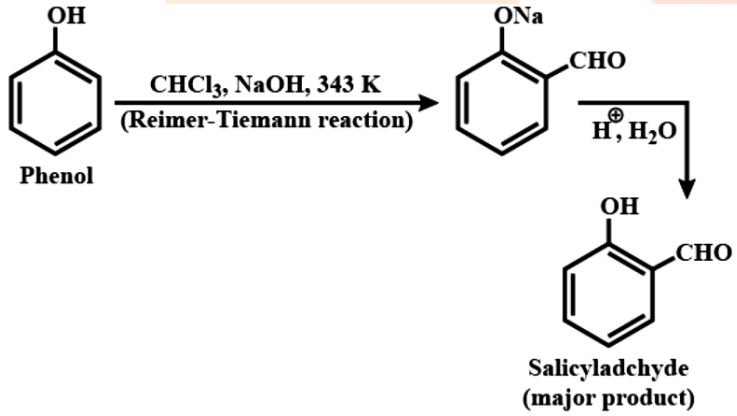
Question: What is the oxidation number of iron in the compound formed in brown ring test of NO_3^-
Options:
(a) +1
(b) +2
(c) +3
(d) -1
Answer: (a)
Solution:
+1 oxidation state of Fe
The brown ring complex compound is formulated as $[Fe(H_2O)_5 NO]SO_4$.

Question: Which reagent is used for getting red colour with nickel ions Ni^{+2}

Options:
(a) EDTA
(b) Dimethylglyoxime
(c) **α** - nitroso - **β** - naphthol
(d) None of the above
Answer: (b)
Solution:

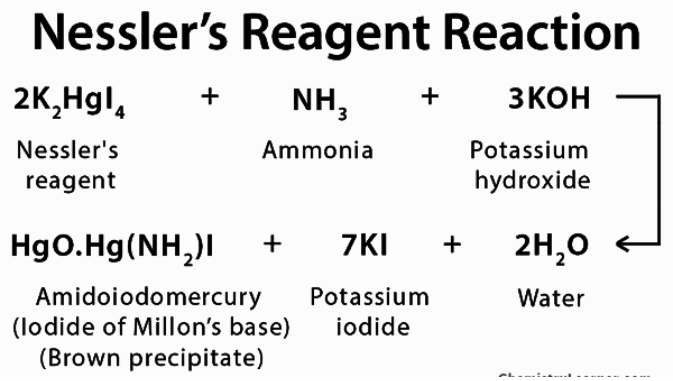


Question: Phenol is reacted with chloroform in the presence of NaOH and the obtained product is hydrolyzed in presence of acid. The final product is
Options:
(a) Benzene-1,2-diol
(b) Benzene-1,3-diol
(c) Salicylaldehyde
(d) Hydroxybenzaldehyde
Answer: (c)
Solution:



Question: Which ion gives brownish colour with nessler's reagent
Options:
(a) Sulphate salt
(b) Nitrate ion
(c) Bromide ion
(d) Ammonium salt
Answer: (d)

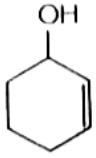
Solution:



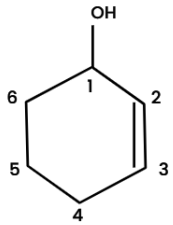
Question: Arrange the following compounds according to the pKa value.
a. Phenol
b. Meta nitrophenol
c. Para nitrophenol
d. Ethanol
Options:
(a) d>a>b>c
(b) a> b> c>d
(c) b>c>d>a
(d) c>d>b>a
Answer: (a)
Solution:

Question: Best reducing agent among the given ions are :
Options:
(a) Ce^{4+}
(b) Gd^{2+}
(c) Lu^{3+}
(d) Nd^{3+}
Answer:
Solution:

Question: IUPAC Name of the compound is



Options:
(a) Hex - 2 - en - 1 - ol
(b) Cyclohex - 2 - en - 1 - ol
(c) 3 - Hydroxycyclohexane
(d) Cyclohex - 1 - en - 3 - ol
Answer: (b)
Solution:

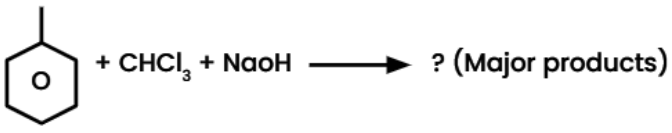


Cyclohex - 2 - en - 1 - ol

Question: Why does oxygen show anomalous behaviour in group 16 in the periodic table?
Options:
(a) Large size, high electronegativity
(b) Small size, small electronegativity
(c) Small size, high electronegativity, absence of vacant d - orbit
(d) Large size high electronegativity presence of vacant
Answer: (c)

Question: How many of the following compounds have zero dipole moment.
NH_3 , H_2O , HF, CO_2 , SO_2 , BF_3 , CH_4
Solution:
NH_3 ⇒ Dipole Moment ≠0
BF_3 ⇒ Dipole Moment = 0
SO_2 ⇒ Dipole Moment ≠0
CO_2 ⇒ Dipole Moment = 0
CH_4 ⇒ Dipole Moment = 0
HF ⇒ Dipole Moment ≠ 0
CO_2, BF_3 and CH_4 Dipole Moment is zero

Question: Statement 1(S_1): F has highest EGE in its grp
Statement 2(S_2) : O has 2nd most EGE in its grp.
Options:
(a) Both statement I and statement II are false
(b) Statement I is true but statement II is false
(c) Statement I is false but statement II is true
(d) Both statement I and statement II are true
Answer: (c)
Solution:
1st statement wrong 2nd statement right

Question: 

Question: S1 : Rutherford said mass is at the centre and charge is distributed.
S2 : e^- are clustered

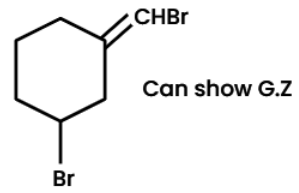
Question: Number of antibonding in 1s & 2p of diatomic **α** diatomic molecule ?

Question: Find total number of $\boldsymbol{\pi}$ & $\boldsymbol{\sigma}$ bond in 2 formyl hex - 4 - enoic acid
Options:
(a) Sigma bonds = 18
Pi bonds = 3
(b) Sigma bonds = 16
Pi bonds = 2
(c) Sigma bonds = 16
Pi bonds = 3
(d) Sigma bonds = 18
Pi bonds = 2
Answer: (a)
Solution:
2 - Formyl hen - 4 - enoic acid (CH3-CH=CH-CH2-CH(CHO)- COOH)
σ bonds - 18
$\boldsymbol{\pi}$ bonds - 3

Question: Radio activity
Half life was given 36 hours.
Find amount left after 1 day log value was given.
Solution:
$K = \frac{0.693}{36} hus^{-1}$

$\frac{0.693}{36} \times 34 = 2.303 \quad \log \frac{1}{A_k}$

Question: IUPAC name K_2 [MnO_4] according to coordination compound
Solution:



Question: Which of them is a strong RA
Options:
(a) Ce^{4+}
(b) Ga^{3+}
(c) Tb^{3+}
(d) Ho^{2+}
Answer:
Solution:

Question: Number of antibonding in 1s & 2p of diatomic **α** diatomic molecule ?

Question: Find molality of 0.8M H_2SO_4 (density=1.06g/cm^3) we have to give answer in __10^{-3}
Solution:

$$m = \frac{1000\,M}{M \times H_b - 1000\,d} = \frac{1000 \times 0.8}{0.8 \times 98.10^3 \times 1.06}$$

Question: Which of the following element has highest 1st ionization energy ?
Options:
(a) N
(b) C
(c) Si
(d) Al
Answer: (a)

Question: Match the following :

(A) Lyman	(I) IR
(B) Balmer	(II) IR
(C) Paschen	(III) Visible
(D) p-fund	(IV) UV

Solution:
A-Uv
B-Visible
C-Ir
D-Ir

Question: If standard enthalpy of vaporization of CCl_4 is 30.5 kJ/mol, find heat absorbed for vaporization of 294 gm of CCl_4. [Nearest integer] [in kJ/mol]
Solution:
1 mole → 30.5 kJ/mol
154 gm → 30.5 kJ/mol $\quad \Delta H_{vap}$

294 gm $\quad$ mol 1.g → ? $\quad \Delta H_{vap} = 58.2$

Question: 50 mL of 0.5 oxalic acid is completely neutralized by 25 mL of NaOH solution. Find out the amount of NaOH (in gm) present in 25 mL of given NaOH solution.

Question: Match the following

(A) Starch	(I) Peptide linkage
(B) Cellulose	(II) **α**-D-Glycosidic linkage
(C) Proteins	(III) ***β*** - D - Glycosidic linkage
(D) Nucleic acids	(IV) nucleotide

Solution:
Starch - alpha d glucose
Cellulose - beta d glucose
Protein - peptide
Nucleic acid - nucleotide