

136. Acid catalyzed hydration of alkenes except ethene leads to the formation of

- 1) mixture of secondary and tertiary alcohols
- 2) mixture of primary and secondary alcohols.
- 3) secondary or tertiary alcohol
- 4) primary alcohol

Ans. (3)

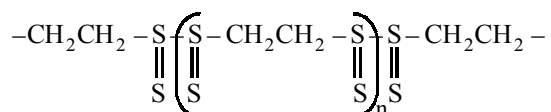
Any alkene except ethylene on acid catalyzed hydration gives secondary or tertiary alcohol because reaction proceeds according to electrophilic addition reaction mechanism.

137. Which of the following is fully fluorinated polymer?

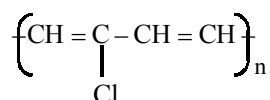
- 1) PVC
- 2) Thiokol
- 3) Teflon
- 4) Neoprene

Ans. (3)

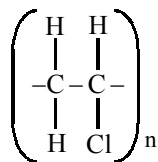
Thiokol



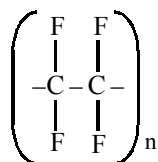
Neoprene :



PVC:



Teflon :

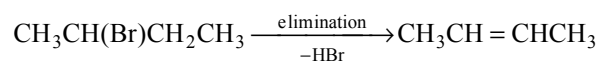


138. Elimination of bromine from 2-bromobutane results in the formation of -

- 1) predominantly 2-butyne
- 2) predominantly 1-butene
- 3) predominantly 2-butene
- 4) equimolar mixture of 1 and 2-butene

Ans. (3)

In elimination reaction of alkyl halide major product obtained according to Saytzev's rule (highly substituted alkene is the major product).



139. Equimolar solutions in the same solvent have

- 1) Different boiling and different freezing points
- 2) Same boiling and same freezing points
- 3) Same freezing point but different boiling point
- 4) Same boiling point but different freezing point

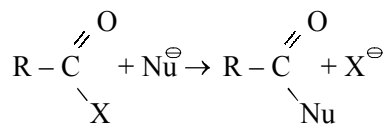
Ans. (2)

van't Hoff factor (i) is not known so it is impossible to predict relation between colligative properties of equimolar solutions in the same solvent.

If, $i = 1$

Then Equimolar solutions in the same solvent will have same boiling and same freezing points.

140. The reaction



is fastest when X is

- 1) OCOR 2) OC₂H₅ 3) NH₂ 4) Cl

Ans. (4)

Cl⁻ is the best leaving group among the given option.

141. The structure of diborane (B₂H₆) contains

- 1) four 2c-2e bonds and four 3c-2e bonds
2) two 2c-2e bonds and two 3c-3e bonds
3) two 2c-2e bonds and four 3c-2e bonds
4) four 2c-2e bonds and two 3c-2e bonds

Ans. (4)

Diborane, B₂H₆ has hydrogen bridge structure B atoms and 4 terminal H atoms lie in the same plane; the terminal B-H bonds may be regarded as conventional 2 centre-2 electron bonds i.e. 2c-2e bonds. The two bridging H atoms lie symmetrically above and below this plane. Here three centers are united by two paired electrons (3c-2e) bonding called banana bond.

142. Which of the following statements in relation to the hydrogen atom is correct?

- 1) 3s, 3p and 3d orbitals all have the same energy
2) 3s and 3p orbitals are of lower energy than 3d orbital
3) 3p orbital is lower in energy than 3d orbital
4) 3s orbital is lower in energy than 3p orbital

Ans. (1)

For hydrogen the energy order of orbital is

$$1s < 2s = 2p < 3s = 3p = 3d < 4s = 4p = 4d = 4f$$

143. Which of the following factors may be regarded as the main cause of lanthanide contraction?

- 1) Greater shielding of 5d electron by 4f electrons
2) Poorer shielding of 5d electrons by 4f electrons
3) Effective shielding of one of 4f electrons by another in the subshell
4) Poor shielding of one of 4f electron by another in the subshell

Ans. (4)

144. The value of the 'spin only' magnetic moment for one of the following configurations is 2.84 BM. The correct one is

- 1) d⁵ (in strong ligand field)
2) d³ (in weak as well as in strong fields)
3) d⁴ (in weak ligand field)
4) d⁴ (in strong ligand field)

Ans. (1)



Initial 0 0.5 0
press.

At equi. 0 0.5 + p p

$$0.5 + 2p = 0.84$$

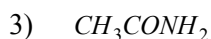
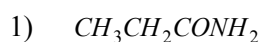
$$\therefore p = 0.17 \text{ atm}$$

$$K_p = p_{\text{NH}_3} \times p_{\text{H}_2\text{S}}$$

$$= (0.67) \times (0.17)$$

$$= 0.11 \text{ atm}^2$$

149. An organic compound having molecular mass 60 is found to contain C = 20%, H = 6.67% and N = 46.67% while rest is oxygen. On heating it gives NH_3 alongwith a solid residue. The solid residue give violet colour with alkaline copper sulphate solution. The compound is



Ans. (2)

Element	Percentage	Relative no. of atoms	Simplest ratio
C	20	1.67	1
H	6.67	6.67	4
N	46.67	3.33	2
O	26.66	1.67	1

The molecular formula is $\text{CH}_4\text{N}_2\text{O}$

So, the compound is H_2NCONH_2



Biuret gives violet colour with alkaline copper sulphate solution

150. $t_{1/4}$ can be taken as the time taken for the concentration of a reactant to drop to $\frac{3}{4}$ of its initial value. If the rate

constant for a first order reaction is K, the $t_{1/4}$ can be written as

1) $0.75 / K$

2) $0.69 / K$

3) $0.29 / K$

4) $0.10 / K$

Ans. (3)

$$t_{1/4} = \frac{2.303}{K} \log \frac{4}{3}$$
$$= \frac{0.29}{K}$$