Q1: NTA Test 12 (Numerical)

Among the compounds, Benzene, Carbon tetrachloride, Naphthalene, Benzoic acid, Isooctane and Anthracene, how many can be purified by sublimation.

Q2: NTA Test 32 (Single Choice)

A miscible mixture of C_6H_6 + $CHCl_3$ can be separated by

(A) Sublimation

(B) Distillation

(C) Filtration

(D) Crystallisation

Q3: NTA Test 38 (Single Choice)

Analysis show that iron oxide consist of Iron ion with 94% ions having d^6 configuration and 6% having d^5 configuration. Which amongst the following best represents the formula of the oxide?

(A) $Fe_{0.97}O$

(B) $Fe_{1.03}O$

(C) $Fe_{0.60}O$

(D) $Fe_{0.94}O_{0.94}$

Q4: NTA Test 46 (Single Choice)

The distillation technique most suited for separating glycerol from spent-lye in the soap industry is

(A) Distillation under reduced pressure

(B) Simple distillation

(C) Fractional distillation

(D) Steam distillation

Answer Keys

Q1: 3

Q2: (B)

Q3: (A)

Q4: (A)

Solutions

Q1: 3

Naphthalene, Benzoic acid and Anthracene are purified by sublimation.

Q2: (B) Distillation

Miscible mixture of C_6H_6 + $CHCl_3$ can be separated by distillation method due to the significant difference in their boiling points. Boiling point of Benzene is $80.1^{o}C$ while that of chloroform is $61.2^{o}C$.

Q3: (A) $Fe_{0.97}O$

$d^6 \rightarrow Fe^{+2}, d^5 \rightarrow Fe^{+3}$

Total charge of Iron

$= (0.94 \times 2) + (0.06 \times 3) = 1.88 + 0.18 = 2.06$

Number of O^{-2} ion $= \frac{2.06}{2} = 1.03$

Formula of solid $= FeO_{1.03} = Fe_{0.97}O$

Q4: (A) Distillation under reduced pressure

Glycerol (B.P. 290°C) is separated from spent lye in the soap industry by distillation under reduced pressure, as for simple distillation very high temperature is required which might decompose the component.