

**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)

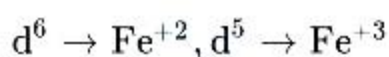
## Solutions

**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  $80.1^\circ C$  while that of chloroform is  $61.2^\circ C$ .

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

Total charge of Iron

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

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

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

**Q4: (A) Distillation under reduced pressure**

Glycerol (B.P.  $290^{\circ}\text{C}$ ) 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.