Chapter 6

1. How concentration of surfactant change on addition of salt?

Ans: Decreases

2. Cloud point temperature exists for

(a) Cationic (b) Anionic (c) Non ionic surfactants

Ans: (c)

3. Cloud point temperature of TX114 is higher or lower than that of TX100?

Ans: Lower.

4. Where organic solutes are solubilized in micelles?

Ans: Inner hydrophobic core.

5. Aniline is removed by SDS micellar solution of 15.5 kg/m^3. Feed concentration is 200 mg/l. Solubilization of phenol in micelle is, S=2.7 x 10^{-3} mg/gm. Solubilization isotherm is

$$S = \frac{Qb_1C_p}{1+b_1C_p}$$ where S in mg/gm;

Q=0.5 mg/gm; b1=5X10^{-2} l/mg; if C_g=250 kg/m^3 and k=5x10^{-5} m/s and CMC=2.3 kg/m^3, find permeate flux and concentration of aniline.

Ans. Co^s =15.5 kg/m3

K=5x10-5 m/s

$$S = \frac{Qb_1C_p}{1+b_1C_p}$$

$$2.7\times10^{-3} = \frac{0.5\times0.05C_p}{1+0.05C_p}$$

$$2.7\times10^{-3}+1.35\times10^{-4}C_p = 0.025C_p$$

$$C_p = 0.108 mg/l$$

$$\%R_o = 1-\frac{0.108}{200} = 99.9\%$$

$$J = k \ln \frac{c_g}{c_0}$$

$$= 5\times10^{-5} \ln \frac{280}{15.5} = 1.45\text{x}10^{-4} \text{ m/s}$$