Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(Petroleum Refinary Engineering) (EL-I 2013 Batch) (Sem.–6)

SEPARATION TECHNIQUES

Subject Code : BTPC-605A

M.Code : 74041

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Write briefly / Fill in the blanks :

a) Give two applications of MF.

b) Explain the term Osmosis.

c) Explain the term Semi Permeability.

d) What is the effect of temperature on adsorption?

e) What is reverse osmosis? What is a tubular membrane filter?

f) How many membrane configurations are commercially available?

g) Write the correlation to correlate adsorption data (where Y_{max} is the maximum amount of solute adsorbed per mass of adsorbent, X is the mass fraction of solute in the diluent phase in solutefree basis, KL is a constant and Y is the equilibrium value of the mass of solute adsorbed per mass of adsorbent).

h) In gas chromatography, the basis for separation of the components is the difference in .....

i) In reverse phase chromatography, the stationary phase is made .....

j) Electrophoresis of negatively charged particles (anions) is called .....

SECTION-B

2. Explain fouling of membranes, how you will prevent it.

3. a) Explain the characteristics of the solids to be used in adsorption techniques,

   b) Give the application of MF, UF RO processes.

4. What is an adsorption isotherm? Give the five types

5. Calculate the osmotic pressure of a solution containing 0.10gmol NaCl/1000g H_2O at 25°C.

   Density of water = 997.0 kg/m^3.

6. Give the types of chromatography and explain in detail Liquid chromatography separation system.

SECTION-C

7. Write note on Zone Electrophoresis.

8. Explain in detail various techniques of zone refining.

9. Explain the electric double layer ionic separation method.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.