M. Tech. First Semester (Membrane & Separation Technology) (F.T.)

13023 : Advances in Absorption & Adsorption Separation Technologies : 1 MST 1

P. Pages : 1

Time : Three Hours

* 0 6 3 8 *

AW - 3435

Max. Marks : 80

Notes :
1. Answer **any six** question.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Diagrams and Chemicals equations should be given wherever necessary.
5. Illustrate your answer necessary with the help of neat sketches.
6. Use of pen Blue/Black ink/refill only for writing the answer book.

1. Discuss in details the performance evaluation of a packed tower and how to decide the minimum liquid rate for absorption. **13**

2. How will you design the packed tower based on based on height of transfer unit? **13**

3. What are the various packing available for use in packed towers? Discuss their characteristics. **13**

4. Discuss in details the various correlations of mass transfer in packed towers. **13**

5. How to determine number of stages for absorption in a plate column and how to determine the tray efficiency? **14**

6. What are the commercial adsorbents and discuss their applications. Discuss the salient characteristics of molecular sieves and silica gel. **13**

7. What do you understand by adsorption equilibria. Discuss in details their salient features and how to determine heat of adsorption. **13**

8. Explain the concept of MTZ and breakthrough in a bed and how to design a bed on the basis of LUB. **13**

9. What are the various models proposed for adsorption dynamics and discuss in details the equilibrium model and the velocity of the concentration front. **13**

10. Explain the following: **14**

    i) Characteristics and properties of adsorbents.

    ii) Pressure swing adsorption and thermal swing adsorption.

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