

M.Tech. Second Semester (Chemical Engineering) (CBS)
13012 : Advanced Separation Techniques : 2 CE 2

P. Pages : 1

Time : Three Hours



AW - 3451

Max. Marks : 80

- Notes :
1. All question carry as indicated marks.
 2. Answer **six** questions in all.
 3. Due credit will be given to neatness and adequate dimensions.
 4. Diagrams and chemicals equations should be given wherever necessary.
 5. Illustrate your answer necessary with the help of neat sketches.
 6. Discuss the reaction, mechanism wherever necessary.
 7. Use of pen Blue/Black ink/refill only for writing the answer book.

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| 1. | What are the standard methods for investigation of membrane surface? | 13 |
| 2. | What is membrane surface modification? Explain in detail the surface modification by chemical modification, plasma polymerization and graft polymerization. | 13 |
| 3. | What are the different types of modules used in membrane processes? Explain in detail the spiral wound module. | 13 |
| 4. | What are the membranes available for Reverse Osmosis? Explain the process of Reverse Osmosis in detail. | 13 |
| 5. | With a suitable example discuss in detail a industrial application of ultrafiltration membrane process. | 14 |
| 6. | What is a Gas permeation membrane? Explain in brief different applications of Gas permeation membranes. | 13 |
| 7. | Explain in detail the factors affecting the membrane performance in detail. | 13 |
| 8. | What are the different types of fouling? How will you control them? | 13 |
| 9. | With suitable examples explain the roles of membranes in water conservation. | 13 |
| 10. | What is Membrane bioreactor technology? Explain in detail with suitable example. | 14 |
