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Total number of printed pages - 01

B.TECH
PECE 5406

8th Semester Regular Examination 2016 - 17

MODERN SEPARATION TECHNIQUES

BRANCH : Chemical Engineering

Time : 3 Hours

Max Marks : 70

Question Code :Z219

Answer Question No. 1 which is compulsory and any FIVE from the rest.

The figures in the right-hand margin indicate marks.

Answer all parts of a question at a place.

1. Answer the following questions : (2 x 10)
 - (a) In membrane literature, MW is expressed as _____.
 - (b) Thickness of asymmetric membranes are _____ to _____ micron.
 - (c) What are isotonic solutions ?
 - (d) Does pressure affect the performance of NF membranes ? Justify.
 - (e) Size of the retained species by UF is _____ to _____ Å.
 - (f) MF is operated at _____ to _____ bar pressure.
 - (g) The volume of blood in a normal human body is about _____ litre.
 - (h) Draw a schematic diagram of membrane gas separation with proper notations.
 - (i) Write the effect of temperature on pervaporation.
 - (j) Mention the advantages of ELM.
2. Classify in detail the various membrane processes. (10)
3. Discuss in detail, the types of synthetic membranes. (10)
4. (a) Discuss the industrial applications of NF. (05)
(b) Discuss the factors affecting the performance of UF. (05)
5. Draw the concentration profile of a dialysis process and derive the flux equation, J_{AS} . (10)
6. Discuss in detail the applications of pervaporation. (10)
7. (a) Discuss the basic principle of electro dialysis process with a neat diagram. (05)
(b) With a neat diagram, discuss the bulk liquid membranes. (05)
8. Write short notes on any **TWO**: (5 x 2)
 - (a) Advantages of RO
 - (b) Cross-flow and dead-end MF
 - (c) Knudsen diffusion for gas transport
 - (d) Applications of electro dialysis
