

Code No: 58044

Set No. 1

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

IV B.Tech. II Sem., II Mid-Term Examinations, April-2014

MEMBRANE TECHNOLOGY

Objective Exam

Name: _____ Hall Ticket No.

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Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I. Choose the correct alternative:

1. Tick the suitable membrane for gas separation []
A) Symmetric B) biological membrane C) composite membrane D) none
2. Suitable module for a high fouling tendency []
A) spiral – wound B) hollow fiber C) plate – frame D) tubular
3. Which membranes are assembled in tubular module configurations []
A) Organic B) ceramic C) polymeric D) dense
4. Membranes for preparation requires []
A) Low surface porosity B) high surface porosity
C) non porous sub layer D) symmetric structure
5. Tick the preparation technique for supported liquid membrane []
A) Phase inversion B) dip coating C) sintering D) SEM
6. Name the membrane process which takes place because of activity difference []
A) Ultra filtration B) Nano-filtration C) Membrane distillation D) Pervaporation
7. Which of the below mentioned processes have a similar concentration profile []
A) Gas separation B) Micro filtration C) Nano-filtration D) Dialysis
8. The selectivity of a membrane for a given solute is expressed by []
A) permeability coefficient B) Distribution coefficient
C) Retention coefficient D) Wettability coefficient
9. Concentration polarization modules increases []
A) With increasing flux (J), increasing retention (R_{int}) and decreasing mass transfer coefficient (k)
B) With decreasing J, increasing R_{int} and decreasing k
C) With increasing J, decreasing R_{int} and decreasing k
D) None of the above
10. The separation of two gases by a Knudsen flow mechanism depends []
A) on the ratio of the square root of their corresponding molecular weights
B) inversely on the ratio of the square root of their molecular weight
C) directly on the ratio of their molecular weights
D) inversely on the ratio of their molecular weights

Cont.....2

II Fill in the Blanks:

11. The osmotic pressure difference ($\Delta\pi$) across the membrane increases until _____
12. Desalination of sea water, suitable module is _____
13. The flux through the membrane decreases over time due to _____
14. By applying a high cross flow velocity the residence time of the feed in a feed channel would be _____
15. In dialysis, the separation mechanism expressed by _____
16. In pervaporation and gas separation with dense membranes, fouling is virtually _____
17. The membrane consists of cation-exchange membrane, anion-exchange membrane and an intermediate layer between the two membranes is called _____
18. Flux increases with increasing pressure in _____
19. The meaning of packing density is _____
20. Gas separation through nonporous membranes depends on differences in the _____ of various gases.

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Set No. 2

IV B.Tech. II Sem., II Mid-Term Examinations, April-2014

Objective Exam

Name: _____

Hall Ticket No.

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Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I. Choose the correct alternative:

- | | | | |
|-----|--|-----------------------------|--------------------------|
| 1. | Membranes for preparation requires | [|] |
| | A) Low surface porosity | B) high surface porosity | |
| | C) non porous sub layer | D) symmetric structure | |
| 2. | Tick the preparation technique for supported liquid membrane | [|] |
| | A) Phase inversion | B) dip coating | C) sintering |
| | | | D) SEM |
| 3. | Name the membrane process which takes place because of activity difference | [|] |
| | A) Ultra filtration | B) Nano-filtration | C) Membrane distillation |
| | | | D) Pervaporation |
| 4. | Which of the below mentioned processes have a similar concentration profile | [|] |
| | A) Gas separation | B) Micro filtration | C) Nano-filtration |
| | | | D) Dialysis |
| 5. | The selectivity of a membrane for a given solute is expressed by | [|] |
| | A) permeability coefficient | B) Distribution coefficient | |
| | C) Retention coefficient | D) Wettability coefficient | |
| 6. | Concentration polarization modules increases | [|] |
| | A) With increasing flux (J), increasing retention (R_{int}) and decreasing mass transfer coefficient (k) | | |
| | B) With decreasing J, increasing R_{int} and decreasing k | | |
| | C) With increasing J, decreasing R_{int} and decreasing k | | |
| | D) None of the above | | |
| 7. | The separation of two gases by a Knudsen flow mechanism depends | [|] |
| | A) on the ratio of the square root of their corresponding molecular weights | | |
| | B) inversely on the ratio of the square root of their molecular weight | | |
| | C) directly on the ratio of their molecular weights | | |
| | D) inversely on the ratio of their molecular weights | | |
| 8. | Tick the suitable membrane for gas separation | [|] |
| | A) Symmetric | B) biological membrane | C) composite membrane |
| | | | D) none |
| 9. | Suitable module for a high fouling tendency | [|] |
| | A) spiral – wound | B) hallow fiber | C) plate – frame |
| | | | D) tubular |
| 10. | Which membranes are assembled in tubular module configurations | [|] |
| | A) Organic | B) ceramic | C) polymeric |
| | | | D) dense |

Cont....2

II Fill in the Blanks:

11. By applying a high cross flow velocity the residence time of the feed in a feed channel would be _____
12. In dialysis, the separation mechanism expressed by _____
13. In pervaporation and gas separation with dense membranes, fouling is virtually _____
14. The membrane consists of cation-exchange membrane, anion-exchange membrane and an intermediate layer between the two membranes is called _____
15. Flux increases with increasing pressure in _____
16. The meaning of packing density is _____
17. Gas separation through nonporous membranes depends on differences in the _____ of various gases.
18. The osmotic pressure difference ($\Delta\pi$) across the membrane increases until _____
19. Desalination of sea water, suitable module is _____
20. The flux through the membrane decreases over time due to _____

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Set No. 3

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Name: _____ Hall Ticket No.

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Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I. Choose the correct alternative:

1. Name the membrane process which takes place because of activity difference []
A) Ultra filtration B) Nano-filtration C) Membrane distillation D) Pervaporation
2. Which of the below mentioned processes have a similar concentration profile []
A) Gas separation B) Micro filtration C) Nano-filtration D) Dialysis
3. The selectivity of a membrane for a given solute is expressed by []
A) permeability coefficient B) Distribution coefficient
C) Retention coefficient D) Wettability coefficient
4. Concentration polarization modules increases []
A) With increasing flux (J), increasing retention (R_{int}) and decreasing mass transfer coefficient (k)
B) With decreasing J, increasing R_{int} and decreasing k
C) With increasing J, decreasing R_{int} and decreasing k
D) None of the above
5. The separation of two gases by a Knudsen flow mechanism depends []
A) on the ratio of the square root of their corresponding molecular weights
B) inversely on the ratio of the square root of their molecular weight
C) directly on the ratio of their molecular weights
D) inversely on the ratio of their molecular weights
6. Tick the suitable membrane for gas separation []
A) Symmetric B) biological membrane C) composite membrane D) none
7. Suitable module for a high fouling tendency []
A) spiral – wound B) hallow fiber C) plate – frame D) tubular
8. Which membranes are assembled in tubular module configurations []
A) Organic B) ceramic C) polymeric D) dense
9. Membranes for preparation requires []
A) Low surface porosity B) high surface porosity
C) non porous sub layer D) symmetric structure
10. Tick the preparation technique for supported liquid membrane []
A) Phase inversion B) dip coating C) sintering D) SEM

Cont.....2

II Fill in the Blanks:

11. In pervaporation and gas separation with dense membranes, fouling is virtually _____
12. The membrane consists of cation-exchange membrane, anion-exchange membrane and an intermediate layer between the two membranes is called _____
13. Flux increases with increasing pressure in _____
14. The meaning of packing density is _____
15. Gas separation through nonporous membranes depends on differences in the _____ of various gases.
16. The osmotic pressure difference ($\Delta\pi$) across the membrane increases until _____
17. Desalination of sea water, suitable module is _____
18. The flux through the membrane decreases over time due to _____
19. By applying a high cross flow velocity the residence time of the feed in a feed channel would be _____
20. In dialysis, the separation mechanism expressed by _____

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Set No. 4

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MEMBRANE TECHNOLOGY

Objective Exam

Name: _____ Hall Ticket No.

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Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I. Choose the correct alternative:

1. The selectivity of a membrane for a given solute is expressed by []
A) permeability coefficient B) Distribution coefficient
C) Retention coefficient D) Wettability coefficient
2. Concentration polarization modules increases []
A) With increasing flux (J), increasing retention (R_{int}) and decreasing mass transfer coefficient (k)
B) With decreasing J, increasing R_{int} and decreasing k
C) With increasing J, decreasing R_{int} and decreasing k
D) None of the above
3. The separation of two gases by a Knudsen flow mechanism depends []
A) on the ratio of the square root of their corresponding molecular weights
B) inversely on the ratio of the square root of their molecular weight
C) directly on the ratio of their molecular weights
D) inversely on the ratio of their molecular weights
4. Tick the suitable membrane for gas separation []
A) Symmetric B) biological membrane C) composite membrane D) none
5. Suitable module for a high fouling tendency []
A) spiral – wound B) hallow fiber C) plate – frame D) tubular
6. Which membranes are assembled in tubular module configurations []
A) Organic B) ceramic C) polymeric D) dense
7. Membranes for preparation requires []
A) Low surface porosity B) high surface porosity
C) non porous sub layer D) symmetric structure
8. Tick the preparation technique for supported liquid membrane []
A) Phase inversion B) dip coating C) sintering D) SEM
9. Name the membrane process which takes place because of activity difference []
A) Ultra filtration B) Nano-filtration C) Membrane distillation D) Pervaporation
10. Which of the below mentioned processes have a similar concentration profile []
A) Gas separation B) Micro filtration C) Nano-filtration D) Dialysis

Cont.....2

II Fill in the Blanks:

11. Flux increases with increasing pressure in _____
12. The meaning of packing density is _____
13. Gas separation through nonporous membranes depends on differences in the _____ of various gases.
14. The osmotic pressure difference ($\Delta\pi$) across the membrane increases until _____
15. Desalination of sea water, suitable module is _____
16. The flux through the membrane decreases over time due to _____
17. By applying a high cross flow velocity the residence time of the feed in a feed channel would be _____
18. In dialysis, the separation mechanism expressed by _____
19. In pervaporation and gas separation with dense membranes, fouling is virtually _____
20. The membrane consists of cation-exchange membrane, anion-exchange membrane and an intermediate layer between the two membranes is called _____