

Unit 11 - Week 9

Course outline

How does an NPTEL online course work?

Practice Assignment

Week 1

Week 2

Week 3

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Week 7

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Week 9

Lecture 38: Corrosion potential of soils

Lecture 39: Contaminant transport through porous media- I

Lecture 40: Contaminant transport through porous media- II

Lecture 41: Contaminant transport through porous media- III

Lecture 42: Sorption – desorption characteristics- I

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Weekly Feedback

Quiz : Assignment-9

Assignment-9 solutions

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Week 12

Text Transcripts

Assignment-9

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-04-01, 23:59 IST.

1) Which of the following conditions leads to precipitation of CaCO_3 as a protective coating? 2 points

- LI > 8.5
 LI < 0
 Actual pH of the water > pH of the water in equilibrium with solid CaCO_3
 LI > 0

No, the answer is incorrect.
Score: 0

Accepted Answers:
Actual pH of the water > pH of the water in equilibrium with solid CaCO_3
LI > 0

2) Match the following: 2 points

- | | |
|--------------------------------|------------------|
| i. Hydraulic conductivity | a. Fick's law |
| ii. Concentration conductivity | b. Ohm's law |
| iii. Voltage conductivity | c. Darcy's law |
| iv. Thermal conductivity | d. Fourier's law |

- c, b, a, d
 c, a, d, b
 c, d, b, a
 c, a, b, d

No, the answer is incorrect.
Score: 0

Accepted Answers:
c, a, b, d

3) In which of the following condition(s) the diffusion would not occur? 2 points

- $\Delta C/L \approx 0$
 $Ct \approx C_0$
 $C_i/C_0 = 0$
 All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\Delta C/L \approx 0$
 $Ct \approx C_0$

4) Which of the following laws describe diffusion of contaminants with a non-uniform concentration gradient in a porous system? 1 point

- Darcy's law
 Archie's law
 Fick's first law
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
None of the above

5) Which of the following situations might arise due to diffusion of contaminants through porous media? 2 points

- Impedance reduces as compared to the uncontaminated state
 Impedance increases as compared to the uncontaminated state
 $C_i/C_0 > 1$
 $C_i/C_0 = 1$
 $\Delta C = 1$

No, the answer is incorrect.
Score: 0

Accepted Answers:
Impedance reduces as compared to the uncontaminated state
 $C_i/C_0 = 1$

6) Which of the following contaminant transport mechanisms are dominant during plug flow? 2 points

- Diffusion
 Advection
 Dispersion
 All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
Diffusion
Advection

7) Which of the following parameters control contaminant transport mechanisms? 1 point

- Pore-size
 Tortuosity
 Friction between particles and pore-solution
 All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
All of the above

8) Which of the following statements are correct: 2 points

- Adsorption is a surficial phenomenon
 Adsorption is inversely proportional to the adsorbent surface area
 Sorption is possible between the geomaterials in their same phases
 Higher porosity of the adsorbent might help in higher adsorption

No, the answer is incorrect.
Score: 0

Accepted Answers:
Adsorption is a surficial phenomenon
Higher porosity of the adsorbent might help in higher adsorption

9) Which of the following combinations would be least favorable for sorption to occur? 1 point

- Passive adsorbent and active adsorbate
 Both adsorbent and adsorbate are active
 Both adsorbent and adsorbate are passive
 Active adsorbent and passive adsorbate

No, the answer is incorrect.
Score: 0

Accepted Answers:
Both adsorbent and adsorbate are passive

10) Which of the following application(s) is(are) most suitable to utilize a geomaterial which exhibits higher sorption capacity? 1 point

- As a backfill material
 As permeable reactive barriers
 For arresting the tensile cracking
 All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
As permeable reactive barriers