

Unit 12 - Week 10

Course outline

How does an NPTEL online course work?

Practice Assignment

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Week 10

Lecture 43: Sorption – desorption characteristics- II

Lecture 44: Sorption – desorption characteristics- III

Lecture 45: Thermal characterization- I

Lecture 46: Thermal characterization- II

Lecture 47: Thermal characterization- III

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Assignment-10

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

Due on 2020-04-08, 23:59 IST.

1) Which of the following strategy(ies) can be employed to immobilize contaminants? 1 point

- Adsorption
- Vitrification
- Absorption
- All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
Vitrification

2) Water of volume 12 lt. with initial NaCl concentration of 50 mg/l after passing through a soil column weighing 8 kg reduces to 30 mg/l. The kd of the soil is equal to _____ (in mg/kg/mg/L)

Hint

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) 1

2 points

3) Which of the following will exhibit a higher kd value? 1 point

- Loosely dense sands
- Highly dense clays
- Less denser silty sands
- Less denser clays

No, the answer is incorrect.
Score: 0

Accepted Answers:
Less denser clays

4) The value of kd will not depend upon the following properties of the adsorbate? 1 point

- Compaction density
- Weight of the adsorbate
- Specific surface area
- Mineralogy
- Concentration of adsorbate

No, the answer is incorrect.
Score: 0

Accepted Answers:
Weight of the adsorbate

5) Which of the following statement(s) is(are) correct in context of the BTC? 2 points

- For sorption, C_t/C_0 is always >1
- For desorption, C_t/C_0 is always <1
- For sorption, C_t/C_0 is always equal to 1
- C_t/C_0 will never be greater than 1

No, the answer is incorrect.
Score: 0

Accepted Answers:
For desorption, C_t/C_0 is always <1
 C_t/C_0 will never be greater than 1

6) Sorption of geomaterials is quicker as compared to desorption 1 point

- True
- False

No, the answer is incorrect.
Score: 0

Accepted Answers:
False

7) Which of the following thermal property(ies) is(are) main indicator(s) of heat accumulation in the geomaterial? 2 points

- Higher specific heat
- Higher conductivity
- Lower resistivity
- Lower diffusivity

No, the answer is incorrect.
Score: 0

Accepted Answers:
Higher specific heat
Lower diffusivity

8) Soils exposed to the higher temperatures might undergo _____ 1 point

- Cracking
- Burning of organic matter
- Both (a) and (b)

No, the answer is incorrect.
Score: 0

Accepted Answers:
Both (a) and (b)

9) The passage of thermal flux in the geomaterials doesn't depend upon _____ 1 point

- Mass of the geomaterial
- Thermal conductivity
- Both (a) and (b)
- None of the (a) and (b)

No, the answer is incorrect.
Score: 0

Accepted Answers:
Thermal conductivity

10) Thermal diffusivity of the soil mass should be _____ for the safety of the buried electrical cables 1 point

- More
- Less
- Nothing can be said like this
- Doesn't matter

No, the answer is incorrect.
Score: 0

Accepted Answers:
More

11) Heat sink fluid should have higher _____ 1 point

- Thermal conductivity
- Thermal resistivity
- Density
- Thermal expansion coefficient

No, the answer is incorrect.
Score: 0

Accepted Answers:
Thermal conductivity

12) Match the following: 2 points

- | | |
|------------------------|---------------------------|
| i. Thermal probe | a. Electrical resistivity |
| ii. MIP | b. Dielectric constant |
| iii. FDR probe | c. Porosity |
| iv. Impedance analyzer | d. Thermal resistivity |

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
d, c, b, a

13) In which of the following cases, thermal properties of a geomaterial and water are approximately the same? 1 point

- Geomaterial compacted to a maximum dry-density
- When $S_r < 1$
- When $S_r = 1$
- When $S_r > 1$

No, the answer is incorrect.
Score: 0

Accepted Answers:
When $S_r = 1$

14) In general, the thermal resistivity of the soils is _____ as compared to that of water 1 point

- Higher
- Lesser
- Can't be generalized

No, the answer is incorrect.
Score: 0

Accepted Answers:
Higher