CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

MC

Consolidation is a phenomenon that typically occurs in:

a) Rocks
b) Fine soils
c) Coarse soils
d) All soils

ANSWER: b
REWARD: Advance 2 squares
PUNISHMENT: Miss your next turn

MC

If two layers of the same soil have the same degree of consolidation (U), then the time factor (T) related to these two layers:

a) Are the same
b) Are not related
c) Are linearly related
d) Are logarithmically related

ANSWER: a
REWARD: Advance 3 squares
PUNISHMENT: Go back 1 square

MC

Which of the following symbols represents the compression index?

a) mv
b) Cv
c) Ci
d) CC

ANSWER: d
REWARD: Advance 1 square
PUNISHMENT: Go back 2 squares

MC

According to Terzaghi's One-Dimensional Consolidation Theory, the permeability coefficient (k) is:

a) Null
b) Variable
c) Constant
d) One

ANSWER: c
REWARD: Advance 4 squares
PUNISHMENT: Go back 3 squares

MC

A vertical stress of 100kPa is applied to a saturated clay, the excess pore pressure, in kPa, when the time approaches infinity is:

a) 0
b) 50
c) 100
d) Infinite

ANSWER: a
REWARD: Advance 5 squares
PUNISHMENT: Go back 4 squares

MC

In the standardized oedometer test, two porous stones are used at the upper and lower ends of the soil sample. If we choose to use only one porous stone at the upper end of the sample, what will happen with the void ratio of the sample at the end of the test?

a) It will be 2 times larger than the standard situation
b) It will be 2 times smaller than the standard situation
c) It will be the same as in the standard situation
d) It is not possible to tell by knowing only this information

ANSWER: c
REWARD: Advance 3 squares
PUNISHMENT: Miss your next turn

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

MC

The effective vertical stress acting on the ground is 100kPa. The maximum effective vertical stress ever applied to this soil was 200kPa. What is the soil over-consolidation ratio (OCR)?

a) 0.5
b) 1
c) 2
d) 0

ANSWER: c
REWARD: Advance 2 squares
PUNISHMENT: Stay where you are

MC

Which of the alternatives below is a hypothesis assumed by Terzaghi to develop the Theory of Consolidation?

a) The soil is heterogeneous
b) Compression is three-dimensional
c) The flow is governed by Darcy's law
d) None of the above

ANSWER: c
REWARD: Advance 6 squares
PUNISHMENT: Go back 3 squares

MC

Vertical drains accelerate consolidation because:

a) They create shorter drainage paths in the soil deposit
b) They increase the hydraulic conductivity of the soil
c) Clay becomes over-consolidated when vertical drains are installed.
d) All previous alternatives

ANSWER: a
REWARD: Advance 4 squares
PUNISHMENT: Stay where you are

MC

They are part of the consolidation process, EXCEPT:

a) Immediate consolidation
b) Primary Consolidation
c) Secondary Consolidation
d) Tertiary consolidation

ANSWER: d
REWARD: Advance 5 squares
PUNISHMENT: Go back 5 squares

MC

The virgin compression curve is the curve that relates:

a) Void ratio and effective stress
b) Void ratio and total stress
c) Effective stress and total stress
d) Effective stress and pore pressure

ANSWER: a
REWARD: Advance 2 squares
PUNISHMENT: Miss your next turn

MC

Which sentence is INCORRECT?

a) Consolidation is time dependent
b) Consolidation occurs with the expulsion of air from the voids
c) The compression index (C_c) of clays is generally higher than that of sands
d) Consolidation typically occurs in fine soils

ANSWER: b
REWARD: Advance 3 squares
PUNISHMENT: Go back 1 square

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

MC

A 10m thick soil deposit can only drain water from the top surface, the drainage thickness (H_d) in meters is:

a) 10
b) 5
c) 2.5
d) 7.5

ANSWER: a
REWARD: Advance 1 square
PUNISHMENT: Go back 2 squares

MC

For a given stress difference, the value of the coefficient of compressibility, a_v, ___ with increasing stress

a) Increases
b) Decreases
c) It's the same
d) It's zero

ANSWER: b
REWARD: Advance 4 squares
PUNISHMENT: Go back 3 squares

MC

Which of the values below might be the over-consolidation ratio (OCR) of an over-consolidated soil?

a) 0
b) 0.5
c) 1
d) 2

ANSWER: d
REWARD: Advance 5 squares
PUNISHMENT: Go back 4 squares

MC

The process in which the void ratio is reduced even after all the excess pore pressure due to consolidation is dissipated is known as:

a) Effective stress
b) Load increment
c) Primary Consolidation
d) Secondary Consolidation

ANSWER: d
REWARD: Advance 3 squares
PUNISHMENT: Miss your next turn

MC

From the oedometer test it is possible to determine:

a) The compression index, C_c
b) The consolidation coefficient, c_v
c) Compressibility parameters
d) All previous alternatives

ANSWER: d
REWARD: Advance 2 squares
PUNISHMENT: Stay where you are

MC

The compression index, C_c, of a normally consolidated soil is:

a) Variable
b) Constant
c) Zero
d) One

ANSWER: b
REWARD: Advance 6 squares
PUNISHMENT: Go back 3 squares

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

MC

Which of the alternatives below is NOT a hypothesis assumed by Terzaghi to develop the Theory of Consolidation?

a) Void ratio increases with increasing effective stress
b) water is incompressible
c) Soil properties do not vary during the consolidation process
d) The water flow is one-dimensional

ANSWER: a
REWARD: Advance 4 squares
PUNISHMENT: Stay where you are

MC

Which of the following alternatives are solutions used to reduce the time needed to consolidate a soil deposit?

a) Use of vertical drains
b) Use of temporary landfills
c) Use of light material landfills
d) All previous alternatives

ANSWER: d
REWARD: Advance 5 squares
PUNISHMENT: Go back 5 squares

MC

A soil with an over-consolidation ratio (OCR) of 1, is called:

a) Under-consolidated
b) Normally consolidated
c) Over-consolidated
d) Non-consolidated

ANSWER: b
REWARD: Advance 2 squares
PUNISHMENT: Miss your next turn

MC

According to Terzaghi's One-Dimensional Consolidation Theory, secondary consolidation is:

a) Considered at the start of the test
b) Considered in the middle of the test
c) Considered at the end of the test
d) Disregarded

ANSWER: d
REWARD: Advance 3 squares
PUNISHMENT: Go back 1 square

MC

On a semi-logarithmic scale, the virgin compression curve becomes a/an:

a) Elliptic curve
b) Hyperbolic curve
c) Parabolic curve
d) Straight line

ANSWER: d
REWARD: Advance 1 square
PUNISHMENT: Go back 2 squares

MC

Soil deformations due to the consolidation process can be:

a) Plastic deformations
b) Elastic deformations
c) Viscous deformations
d) All previous alternatives

ANSWER: d
REWARD: Advance 4 squares
PUNISHMENT: Go back 3 squares

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

MC

A 10m thick clay layer is expected to have a Settlement of 1m. What was the degree of consolidation (U), in %, when the Settlement was 10cm?

a) 1
b) 10
c) 99
d) 90

ANSWER: b

REWARD: Advance 5 squares

PUNISHMENT: Go back 4 squares

MC

The total stress corresponding to the construction of a landfill over a saturated clay deposit is 100kPa. At a given time t, where t < infinite, after the beginning of the consolidation process, what is the value of the excess pore-pressure generated in the saturated clay deposit at 1m deep?

a) 0kPa
b) 10kPa
c) 100kPa
d) It is not possible to tell by knowing only this information

ANSWER: d

REWARD: Advance 3 squares

PUNISHMENT: Miss your next turn

MC

The oedometer test takes place with:

a) Only one vertical stress increment
b) Only two vertical stress increments
c) Many vertical stress increments
d) No vertical stress increment

ANSWER: c

REWARD: Advance 2 squares

PUNISHMENT: Stay where you are

MC

For the case of a pre-consolidated soil, the final Settlement is:

a) Small
b) Negligible
c) Large
d) Very large

ANSWER: a

REWARD: Advance 6 squares

PUNISHMENT: Go back 3 squares

MC

Which of the alternatives below is a hypothesis assumed by Terzaghi to develop the Theory of Consolidation?

a) Soil is fully saturated
b) The flow of water is one-dimensional and governed by Darcy's law
c) Soil can be studied as infinitesimal elements, despite being made up of particles and voids
d) All the above

ANSWER: d

REWARD: Advance 4 squares

PUNISHMENT: Stay where you are

MC

Which of the alternatives below is a solution used to reduce Settlement caused by primary consolidation of a soil deposit are:

a) Use of vertical drains
b) Use of temporary landfills
c) Use of light material landfills
d) All previous alternatives

ANSWER: c

REWARD: Advance 5 squares

PUNISHMENT: Go back 5 squares

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

MC

According to the International System (SI), what is the unit of measurement of the compression index (C_c)?

a) Dimensionless
b) kPa
c) KN/m^2
d) kN/m^3

ANSWER: a
REWARD: Advance 2 squares
PUNISHMENT: Miss your next turn

MC

Which of the following are factors that affect the compressibility of the soil?

a) Soil type
b) Stress level
c) Saturation degree
d) All previous alternatives

ANSWER: d
REWARD: Advance 3 squares
PUNISHMENT: Go back 1 square

MC

The consolidation degree (U) depends on:

b) Time
b) Drainage conditions
c) Soil permeability
d) All the above

ANSWER: d
REWARD: Advance 1 square
PUNISHMENT: Go back 2 squares

MC

At the end of the primary consolidation stage, the stress applied to a sample in the oedometer is equal to:

a) Zero
b) Effective stress
c) Total stress
d) Pore water pressure

ANSWER: b
REWARD: Advance 4 squares
PUNISHMENT: Go back 3 squares

MC

According to Terzaghi's One-Dimensional Consolidation Theory, deformation occurs in:

a) Only one direction
b) Only two directions
c) Only three directions
d) None of the directions

ANSWER: a
REWARD: Advance 5 squares
PUNISHMENT: Go back 4 squares

MC

In the oedometer test, the soil sample is:

a) laterally confined
b) vertically confined
c) Confined laterally and vertically
d) None of the above

ANSWER: a
REWARD: Advance 3 squares
PUNISHMENT: Miss your next turn

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

MC

A soil with an over-consolidation ratio (OCR) SMALLER than 1 is called:

a) Under-consolidated
b) Normally consolidated
c) Over-consolidated
d) Non-consolidated

ANSWER: a
REWARD: Advance 2 squares
PUNISHMENT: Stay where you are

MC

According to Terzaghi's One-Dimensional Consolidation Theory, soil deformation occurs entirely due to:

a) Volume change
b) Soil permeability
c) Infiltration of fluids
d) Fluid Viscosity

ANSWER: a
REWARD: Advance 6 squares
PUNISHMENT: Go back 3 squares

MC

The recompression index, C_s, is ___ than the compression index, C_c

a) Much larger
b) Larger
c) Smaller
d) Equal

ANSWER: c
REWARD: Advance 4 squares
PUNISHMENT: Stay where you are

MC

The consolidation process in fine soils is ___ that in sands

a) Faster
b) Slower
c) equal
d) None of the above

ANSWER: b
REWARD: Advance 5 squares
PUNISHMENT: Go back 5 squares

MC

According to Terzaghi's One-Dimensional Consolidation Theory, Darcy's law is:

a) Invalid
b) Valid
c) Invalid for clays only
d) Invalid for gravel only

ANSWER: b
REWARD: Advance 2 squares
PUNISHMENT: Miss your next turn

MC

What is the unit of measurement of the coefficient of consolidation, c_v?

a) cm/s
b) cm
c) s
d) cm^2/s

ANSWER: d
REWARD: Advance 3 squares
PUNISHMENT: Go back 1 square

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

MC

The total stress corresponding to the construction of a landfill over a saturated clay deposit is 100kPa. At the end of the consolidation process, what is the value of the excess pore-pressure generated in the saturated clay deposit at 1m deep?

a) 0kPa
b) 10kPa
c) 100kPa
d) It is not possible to tell by knowing only this information

ANSWER: a

REWARD: Advance 1 square

PUNISHMENT: Go back 2 squares

MC

According to Terzaghi's One-Dimensional Consolidation Theory, the loading is applied to:

a) Only one direction
b) Only two directions
c) Only three directions
d) None of the directions

ANSWER: a

REWARD: Advance 4 squares

PUNISHMENT: Go back 3 squares

MC

In the standardized oedometer test, two porous stones are used at the upper and lower ends of the soil sample. If we choose to use only one porous stone at the upper end of the sample, what will happen with the time necessary for the primary consolidation to take place:

a) It will be 2 times larger than the standard situation
b) It will be 4 times larger than the standard situation
c) It will be 2 times smaller than the standard situation
d) It will be 4 times smaller than the standard situation

ANSWER: b

REWARD: Advance 5 squares

PUNISHMENT: Go back 4 squares

MC

Deformations due to applications of stresses SMALLER than the pre-consolidation stress of the soil are called:

a) Plastic deformations
b) Elastic deformations
c) Viscous deformations
d) None of the above

ANSWER: b

REWARD: Advance 3 squares

PUNISHMENT: Miss your next turn

MC

According to Terzaghi's One-Dimensional Consolidation Theory, soil and water particles are ___, respectively

a) Compressible and incompressible
b) Compressible and compressible
c) Incompressible and incompressible
d) Incompressible and compressible

ANSWER: c

REWARD: Advance 2 squares

PUNISHMENT: Stay where you are

MC

The pre-consolidation stress is determined:

a) Graphically
b) Numerically
c) Analytically
d) None of the above

ANSWER: a

REWARD: Advance 6 squares

PUNISHMENT: Go back 3 squares

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

MC

What is the unit of measurement for the coefficient of volume compressibility, m_v?

a) m^2/kN
b) m^3/kN
c) m^2/kPa
d) m^3/kPa

ANSWER: a
REWARD: Advance 4 squares
PUNISHMENT: Stay where you are

MC

Terzaghi's Consolidation Theory is INVALID for:

a) Pre-consolidation
b) Over-consolidation
c) Secondary Consolidation
d) None of the previous alternatives

ANSWER: c
REWARD: Advance 5 squares
PUNISHMENT: Go back 5 squares

MC

Casagrande method (log-time) for determining the coefficient of consolidation (c_v) was designed to determine the time needed for the consolidation to reach ___ of consolidation

a) 50%
b) 75%
c) 90%
d) 100%

ANSWER: a
REWARD: Advance 2 squares
PUNISHMENT: Miss your next turn

MC

A soil with an over-consolidation ratio (OCR) GREATER than 1 is called:

a) Under-consolidated
b) Normally consolidated
c) Over-consolidated
d) Non-consolidated

ANSWER: c
REWARD: Advance 3 squares
PUNISHMENT: Go back 1 square

MC

The coefficient of consolidation, c_v, is ___ the time factor, T

a) Inversely proportional to the square root of
b) Inversely proportional to the square of
c) Inversely proportional to
d) Directly proportional to

ANSWER: d
REWARD: Advance 1 square
PUNISHMENT: Go back 2 squares

MC

According to Terzaghi's One-Dimensional Consolidation Theory, excess pore pressure is drained:

a) Only in the vertical direction
b) Only in the tangential direction
c) Only in the horizontal direction
d) In both vertical and horizontal directions

ANSWER: a
REWARD: Advance 4 squares
PUNISHMENT: Go back 3 squares

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

CONSOLIDATE

MC

MC

A normally consolidated soil has an over-consolidation ratio (OCR) equal to:

a) 0
b) 0.5
c) 1
d) 2

ANSWER: c
REWARD: Advance 5 squares
PUNISHMENT: Go back 4 squares

MC

The consolidation coefficient, c_v, is ___ the permeability k

a) Directly proportional to the square root of
b) Directly proportional to the square of
c) Directly proportional to
d) Inversely proportional to

ANSWER: c
REWARD: Advance 3 squares
PUNISHMENT: Miss your next turn

MC

According to Terzaghi's one-dimensional consolidation theory, the delay in consolidation is due to:

a) fluid or water temperature only
b) fluid and water infiltration pressure only
c) soil permeability only
d) fluid or water viscosity only

ANSWER: c
REWARD: Advance 2 squares
PUNISHMENT: Stay where you are

MC

The coefficient of consolidation, c_v, is ___ the coefficient of volume compressibility, m_v

a) Inversely proportional to the square root of
b) Inversely proportional to the square of
c) Inversely proportional to
d) Directly proportional to

ANSWER: c
REWARD: Advance 6 squares
PUNISHMENT: Go back 3 squares

MC

According to Terzaghi's One-Dimensional Theory of Consolidation, the properties of the soil ___ during the consolidation process

a) Vary little
b) Do not vary
c) Vary a lot
d) Can vary a lot or a little

ANSWER: b
REWARD: Advance 4 squares
PUNISHMENT: Stay where you are

MC

Which of the values below might be the over-consolidation ratio (OCR) of an under-consolidated soil?

a) 0
b) 0.5
c) 1
d) 2

ANSWER: b
REWARD: Advance 5 squares
PUNISHMENT: Go back 5 squares