

DIPLOMA IN CIVIL ENGINEERING DCLE(G)

Term-End Examination,

December 2019

BCE-046: SOIL MECHANICS AND
FOUNDATION ENGINEERING

Time : 2 Hours]

[Maximum Marks : 70

Note : (i) Question no.1 is compulsory.

(ii) Attempt any four out of the remaining questions.

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1. Select the right answer out of the given choices in each blank space. 7×2=14
- a) A foundation is said to be shallow/deep when depth (d) width is much larger than (b).
 - b) The delay caused in consolidation by slow drainage of water is called hydrodynamic Pressure/lag.
 - c) $\sigma/\phi/\theta$ is known as internal friction.
 - d) The slope failure in a soil mass is face/to/head type.
 - e) A partially saturated soil is classified as one/two/three phase soil.
 - f) The ratio of settlement at any time to the final settlement is called degree of consolidation / settlement/compression.
 - g) The ratio of volume of voids to the total volume in defined as porosity/void ratio.
2. a) A partially saturated sample of soil has unit weight of 2.0g/cm^3 and specific gravity of soil particles is 2.6 and moisture content in the soil 20% then what will be the degree of saturation? 6

(2)

- b) Discuss the factors affecting compaction. 8
3. a) Using phase relationship prove that 7
- $$\gamma_{sat} = \frac{(G + e)\gamma_w}{1 + e}$$
- b) If a soil sample mass specific gravity is 1.92. Moisture content 30% and SG of solids is 2.75. Calculate the degree of saturation. 7
4. Draw the soil phase diagram and define the following : 4×3½=14
- a) Void ratio (e)
 - b) Porosity (n)
 - c) Degree of saturation (s)
 - d) Water content (w)
5. Define the following : 4×3½=14
- a) Over burden pressure
 - b) Bulk density
 - c) Isobar
 - d) Consolidation
6. a) Explain shear strength. What are the factors that affect the shear strength. 8
- b) What is Mohr coulomb theory? Enumerate the limitations of this theory. 6
7. Write short notes on the following : 4×3½=14
- a) Darcy's law
 - b) Types of failure in a triaxial compression test
 - c) Liquid limit
 - d) Slope failures.

