

00859

**DIPLOMA IN CIVIL ENGINEERING
(DCLEVI)**

Term-End Examination

June, 2011

**BICE-024 : SOIL MECHANICS AND
FOUNDATION ENGINEERING**

Time : 2 hours

Maximum Marks : 70

Note : Attempt any five questions. Question No. 1 is compulsory. All questions carry equal marks.

7x2 = 14

1. (a) _____ is the property of a porous material which permits the passage or seepage of water through its interconnecting voids.
- (b) _____ capacity is the maximum pressure which soil can carry safely without risk of shear failure.
- (c) _____ capacity is the net loading intensity at which neither the soil fails in shear nor there is excessive settlement detrimental to the structure.
- (d) When depth is equal to or less than its width it is called _____ foundation.
- (e) _____ is the summation of effective stress and pore water pressure.

- (f) _____ piles used to transfer load through the pile tip to a suitable bearing stratum, passing soft soil or water.
- (g) Ratio of the volume of voids to the total volume of soil mass called its _____.
2. (a) The total unit weight of the glacial outwash soil is 16 kN/m^3 . The specific gravity of soil particles of the soil is 2.67. The water content of the soil is 17%.
 Caculate -
 (i) Dry unit weight.
 (ii) Porosity.
 (iii) Void Ratio.
 (iv) Degree of saturation. 7
- (b) Write BIS classification system including its major and sub-divisional, parts, giving symbols used. 7
3. (a) Explain briefly permeability and give its importance and also give factors affecting permeability. 7
- (b) Define effective stress. Give its basic principle and also mention its importance in engineering problems. 7
4. (a) Write Coulomb's Law. What are the factors contributing to shear strength of soil and give examples of shear failure in soil ? 7
- (b) Explain Triaxial Shear Test, in Brief and also give its significance. 7

5. (a) Explain Field Compaction Method, and also mention the equipment that are used in the method. 7
- (b) Work-out theoretical maximum dry density for a soil sample having Sp. gravity of 2.7 and OMC = 16%. 7
Also explain difference in OMC value in case of Proctor Test and modified proctor test for cohesive soil and granular soil.
6. (a) Write scope and purpose of soil exploration and also mention methods of soil exploration. 7
- (b) Explain briefly : 7
- (i) Boring method.
 - (ii) SPT.
 - (iii) Dynamic cone penetration test.
7. (a) Define bearing capacity and discuss the factors affecting bearing capacity. Explain Plate Load Test with its limitation in brief. 7
- (b) Write down types of piles and their suitability. Also write suitability of deep Foundations. 7
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