



C09-C-606B

3726

BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2014

DCE—SIXTH SEMESTER EXAMINATION

GEOTECHNICAL ENGINEERING

Time : 3 hours]

[Total Marks : 80

PART—A

3×10=30

Instructions : (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Differentiate between residual soils and transported soils. 3
2. Write a brief note on groundwater exploration. 3
3. Define the terms 'void ratio' and 'porosity', and give the relationship between them. 2+1
4. State any three factors affecting the permeability of soil. 3
5. Write the importance of bearing capacity in the design of foundations. 3
6. Write the equation for determining the minimum depth of foundation by Rankine's method. 2+1
7. Define the settlement of foundations and state two causes for settlement. 2+1
8. Define consolidation and state the principle of consolidation. 2+1

- * 9. Define compaction of soil and mention its necessity. 2+1
10. State the types of field tests and laboratory tests to measure compaction of soil. $1\frac{1}{2}+1\frac{1}{2}$

PART—B

10×5=50

Instructions : (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. (a) Write the importance of soil mechanics in any five areas of civil engineering. 5
- (b) Write short notes on plasticity, cohesion and seive analysis of soil particles. 5
12. (a) List out different types of soil exploration and explain any one method in brief. 5
- (b) Explain the direct shear test using a sketch. 5
13. What are the Atterburg limits? Explain the significance of each limit. 1+9
14. A soil sample has a porosity of 40 %. The specific gravity of solids is 2.70. Calculate (a) void ratio, (b) dry density, (c) unit weight if the soil is 50% saturated and (d) unit weight if the soil is completely saturated. 10
15. State the systems of classification of soils. Explain IS classification in detail. 2+8
16. Explain the procedure of field plate load test for determining the ultimate bearing capacity of soil with a sketch and also indicate the limitations of the test. 5+5
17. (a) Differentiate between uniform settlement and differential settlement. 5
- (b) Explain the Terzaghi's spring model analogy showing the process of consolidation of soil. 5
18. Explain the core-cutter method for determining field density of soil. 10
