



c09-c-606 B

3726

BOARD DIPLOMA EXAMINATION, (C-09)

APRIL/MAY—2015

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. List any six types of soil based on their structure. $\frac{1}{2} \times 6 = 3$

2. Differentiate between preliminary exploration and detailed exploration. $1\frac{1}{2} + 1\frac{1}{2} = 3$

3. Define plasticity of soil and plasticity index. $1\frac{1}{2} + 1\frac{1}{2} = 3$

4. Define shear strength of soil and state any three factors affecting the shear strength of soil. $1 + 2 = 3$

5. Define the terms 'safe bearing capacity' and 'ultimate bearing capacity' of soil. $1\frac{1}{2} + 1\frac{1}{2} = 3$

6. Write a short note on stability of slopes. 3

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- * 7. List any three remedial measures that may be taken to avoid foundation settlements in soil. $1 \times 3 = 3$
8. Differentiate between consolidation and compaction. $1\frac{1}{2} + 1\frac{1}{2} = 3$
9. State any three objectives of soil compaction. $1 \times 3 = 3$
10. Define the terms 'optimum moisture content' and 'maximum dry density'. $1\frac{1}{2} + 1\frac{1}{2} = 3$

PART—B $10 \times 5 = 50$

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. What do you understand by mechanical analysis of soil? Explain, in detail, the hydrometer analysis of fine-grained soil. $3 + 7 = 10$
12. (a) State the need of soil exploration. 4
 (b) Describe the method of conducting direct shear test in laboratory using a sketch. 6
13. Explain, in detail, the method of determining soil moisture content by oven drying method. 10
- * 14. A soil sample has a porosity of 40 percent. The specific gravity of solids is 2.67. 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 different systems of classification of soils and explain the textural classification of soil with a neat sketch indicating salient features. $6 + 4 = 10$

- * 16. (a) Write on the effect of water table on bearing capacity of soils. 3
- (b) Explain the procedure of field plate load test for determining the ultimate bearing capacity of soil with a sketch. 7
17. (a) Differentiate between uniform settlement and differential settlement. 4
- (b) Explain Terzaghi's spring model analogy showing the process of consolidation of soil. 6
18. Explain the modified Proctor test for measuring the OMC and dry density of soil. 10
