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BOARD DIPLOMA EXAMINATION, (C–09)
MARCH/APRIL—2016
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. Define *(a)* plasticity and *(b)* cohesion. 1½+1½=3

2. State any three objectives of soil exploration. 3

3. Define *(a)* voids ratio and *(b)* porosity. 1½+1½=3

4. Define shear strength of soil. State any two factors that govern the shear strength of soil. 1+2=3

5. Define *(a)* ultimate bearing capacity and *(b)* safe bearing capacity. 3

6. State three factors on which bearing capacity of soil depends. 3

7. List any three remedial measures to avoid settlement in soil. 3

8. State Terzaghi principle of consolidation. 3

9. Distinguish between compaction and consolidation. 3

10. State any three objectives of compaction. 3

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)* State various types of soils. 4

(b) Explain the method of dry sieve analysis of soil. 6

12. *(a)* State the classification of subsurface exploration. 5

(b) State the advantages and disadvantages of direct shear test. 5

13. Define liquid limit. Write down the procedure for determination of liquid limit using Cassagrande's method with the help of neat sketch. 2+8=10

14. *(a)* A soil sample has a porosity of 40%. The specific gravity of soil is 2·70. Calculate *(a)* voids ratio and *(b)* dry density. 5

(b) The voids ratio of a sample in its loosest state and densest state are 0·81 and 0·45. The natural voids ratio is 0·53. Calculate density index. 5

15. Explain the IS classification of soil in detail. 10

16. Describe the method of determining the ultimate bearing capacity of soils by plate load test with a neat sketch. 10

17. *(a)* Briefly explain the vertical pressure in soil beneath loaded areas. 5

(b) Discuss the field implications of consolidation of soils in about five lines. 5

18. Explain the method of field measurement of compaction by core cutter method. 10

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