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BOARD DIPLOMA EXAMINATION, (C–09)
MARCH/APRIL—2018
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. Distinguish transported soils and residual soils.

2. State various boring methods for exploration of soil.

3. Define :

(a) Liquid limit

(b) Plastic limit

4. State advantages and disadvantages of direct shear test.

5. Define :

(a) Ultimate bearing capacity

(b) Safe bearing capacity

6. State three modes of failure of soil by shear.

7. Define :

(a) Settlement

(b) Isobar

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8. State Terzaghi principle of consolidation.

9. Define compaction and state the factors that affect the degree of compaction.

10. State any three objectives of compaction.

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)* Explain the method of dry sieve analysis of soil. 6

(b) Describe the procedure for drawing grain size curve on semilog graph. 4

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

(b) Describe the method of conducting direct shear test in the laboratory with the help of a neat sketch. 5

13. Define plasticity index. Write down the procedure for determination of plastic limit. 2+8=10

14. *(a)* A soil sample has a porosity of 37%. The specific gravity of soil is 2·75. Calculate—

(i) void ratio;

(ii) dry density. 5

(b) The voids ratios of a sample in its loosest state and densest state are 0·83 and 0·48. The natural void ratio is 0·56. Calculate density index. 5

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

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

17. *(a)* Describe vertical pressure distribution on horizontal and vertical planes. 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 sand replacement method. 10

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