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BOARD DIPLOMA EXAMINATION, (C–09)
MARCH/APRIL—2017
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)* cohension in soils.

2. State any three purposes of soil exploration.

3. Define *(a)* void ratio and *(b)* porosity of a soil mass.

4. Define shear strength of a soil.

5. Define bearing capacity of a soil.

6. Write three lines about the importance of bearing capacity in foundations.

7. List various factors which cause settlements in soils.

8. Define the principle of consolidation.

9. List two methods of field measurement of compaction.

10. Define 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. Explain the importance of geotechnical engineering from the civil engineer's point of view.

12. *(a)* Describe briefly about groundwater exploration.

(b) Describe the method of conducting direct shear test in the laboratory.

13. Explain the laboratory procedure for determination of plastic limit of soils.

14. The void ratios of a soil sample in its loosest and densest possible states are 0·81 and 0·45. The natural void ratio is 0·53. Calculate the density index.

15. Explain the boundary classification of soils. Give two examples each for boundary classification in coarse-grained soils and fine-grained soils.

16. Justify the importance of 'factor of safety' and 'safe bearing capacity' values in foundation design.

17. *(a)* Explain the vertical pressure in soil beneath loaded areas.

(b) Explain the field implications of consolidation of soils.

18. Explain the method of field measurement of compaction by sand replacement method.

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