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C09–C–606B

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BOARD DIPLOMA EXAMINATION, (C–09)

MARCH/APRIL—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) Answer should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Define *(a)* cohesion and *(b)* plasticity of soil. 3

2. What do you understand by preliminary exploration and detailed exploration? 3

3. Define liquid limit, plastic limit and shrinkage limit. 3

4. Define compressibility of soils and write two reasons for it. 2+1

5. What are the factors affecting the bearing capacity of soil? 3

6. Write the equation for determining the minimum depth of foundation by Rankine's method. 2+1

7. Differentiate between uniform settlement and differential settlement. 3

8. Define consolidation and state the principle of consolidation. 2+1

9. State the factors affecting the compaction. 3

10. Write a brief note on CBR. 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. What do you understand by mechanical analysis of soil? Explain, in detail, the sieve analysis of soil particles. 3+7

12. *(a)* Explain the need of soil exploration and write a short note on groundwater exploration. 5

(b) Explain the triaxial compression test using a neat sketch. 5

13. Explain the laboratory procedure for determining the specific gravity of soil particles by pycnometer method. 10

14. *(a)* Draw a neat sketch of three-phase system soil and label it. 5

(b) A soil sample has a water content of 30% and specific gravity of 2·7, its unit weight is 1·5 gm/c.c. Determine the *(a)* void ratio, *(b)* porosity and *(c)* degree of saturation. 5

15. State the need of classification of soils. Explain IS classification in detail. 4+6

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)* Explain the importance of bearing capacity and settlement in foundation design. 5

(b) Differentiate between consolidation and compaction. 5

18. Explain the standard proctor test for measuring the OMC and dry density of soil. 7+3

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