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BOARD DIPLOMA EXAMINATION, (C-16)

AUGUST/SEPTEMBER—2021

DCE - FIFTH SEMESTER EXAMINATION

GEO TECHNICAL 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. Differentiate between wet sieve analysis and dry sieve analysis of soils.
2. Explain the need of soil exploration.
3. For a given soil sample, liquid limit is 45% and plastic limit is 27%. Find the plasticity index of the given sample.
4. Define the terms cohesion and angle of internal friction.
5. List the different modes of shear failure.
6. What is the importance of factor of safety in soils?
7. Define OMC and MDD of soils.
8. State any three remedial measures against settlement of foundations.
9. List the objectives of compaction.
10. State the laboratory compaction tests to be conducted on soils.

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PART—B

10×5=50

Instructions : (1) Answer *any* five questions.

(2) Each question carries ten marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. Describe hydrometer analysis of fine grained soils with a neat sketch.

12. A partially saturated sample from a borrow pit has a natural moisture content of 15% and bulk unit weight of 19 kN/m^3. The specific gravity of solids is 2·70. Determine degree of saturation and void ratio. What will be the unit weight of sample on saturation?

13. Explain the laboratory procedure for determination of liquid limit of soil by using Cassagrande's liquid limit device.

14. Explain Indian standard soil classification system.

15. *(a)* Explain Terzaghi's spring analogy model with a neat sketch.

(b) Describe the procedure for conducting direct shear box test.

16. *(a)* List the various methods of soil exploration.

(b) Explain briefly the vertical pressure in soil between loaded areas.

17. Explain standard proctor test with a neat sketch.

18. Explain the field plate load test for determining the ultimate bearing capacity of soils.

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