



C16-C-504

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BOARD DIPLOMA EXAMINATION, (C-16)

NOVEMBER—2020

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. Write the importance of soil mechanics in any three areas of Civil Engineering.
2. State any three needs for soil exploration.
3. Define the terms (a) void ratio and (b) porosity.
4. List the factors which affect the permeability of soils.
5. Define bearing capacity of soils. Write any two factors affecting bearing capacity of soils.
6. Write IS code equation for computing bearing capacity of soils.
7. Write a short note on settlement in soils.
8. Write the expression for determination of Terzaghi's effective stress/pressure in consolidation of soils.
9. List any three objectives of compaction.
10. Write a short note on California Bearing Ratio.

**PART—B**

10×5=50

- Instructions :** (1) Answer *any five* questions.  
(2) Each question carries **ten** marks.  
(3) Answers should be comprehensive and the criteria for valuation are the content but not the length of the answer.

- 11.** List the various types of soil and briefly explain any four of them.
- 12.** Explain the test procedure for determination of liquid limit of soils in the laboratory by Casagrande's method.
- 13.** A soil sample has specific gravity of 2.68 and void ratio of 0.65. Determine the (a) dry unit weight, (b) bulk unit weight, when the soil is 40% saturated and (c) bulk unit weight when the soil is completely saturated. Unit weight of water is 9.81 kN/m<sup>3</sup>.
- 14.** Explain briefly IS classification of soils.
- 15.** (a) Explain seismic refraction method of subsoil exploration with the help of a neat sketch.  
(b) Explain the procedure for determining the shear strength of soil by direct shear test.
- 16.** Explain the importance of factor of safety and safe bearing capacity values in the design of foundations.
- 17.** (a) Briefly explain the vertical pressure in soils beneath the loaded areas.  
(b) Explain the process of consolidation in soils and write its importance.
- 18.** Explain the method of field measurement of compaction by core-cutter method.

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