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Reg. No……
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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER - 2024

GEOTECHNICAL ENGINEERING

[Maximum Marks: **100**] [Time: **3** Hours]

PART-A

[Maximum Marks: **10**]

I. (Answer ***all*** questions in one or two sentences. Each question carries ***2*** marks)

1. Differentiate between void ratio and porosity.
2. List out the two methods to find specific gravity of soil.
3. Define compaction.
4. Define the following terms (i) safe bearing capacity (ii) allowable bearing pressure.
5. Write the depth to breadth criteria for shallow foundation. (5 x 2 = 10)

PART-B

[Maximum Marks: **30**]

II. (Answer ***any five*** of the following questions. Each question carries ***6*** marks)

1. What are the different types of transported soil?
2. Describe about the different categories of field compaction.
3. Define coefficient of permeability. State and explain Darcy's law.
4. What are the open excavation methods of soil exploration?
5. Explain the procedure for standard penetration test.
6. Explain the procedure for proportioning of footing.
7. Sketch the section of a well foundation. (5 x 6 = 30)

PART-C

[Maximum Marks: **60**]

(Answer ***one*** full question from each Unit. Each full question carries **15** marks)

UNIT – I

III. a. Explain the three phase and two-phase system of soil? (7)

b. Describe the procedure for finding out the field density of soil by core cutter method. (8)

OR

IV. a. Explain the volumetric relationship of soil. (10)

b. Derive the relationship between void ratio and porosity. (5)

UNIT – II

V. a. List out the factors affecting permeability. (7)

b. Explain the procedure for determining the coefficient of permeability by variable head test method. (8)

OR

VI. a. Explain the various factors affecting compaction of soil. (7)

b. Explain the procedure of standard proctor test. (8)

UNIT- III

VII. a. Describe the procedure of plate load test. (7)

b. List out the limitations of plate load test. (8)

OR

VIII. a. Explain different types of shear failures. (7)

b. Describe the electrical profiling methods of soil exploration. (8)

UNIT - IV

IX. a. Explain the classifications of pile foundations based on material and method of installation. (7)

b. Explain the different types of shallow foundations with the help of sketches. (8)

OR

X. a. Draw the various shapes of a well foundation. (7)

b. What are the measures for the rectification of tilts and shifts? (8)

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