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N19-00184

TED (15) – 5013

Reg. No.

(REVISION — 2015)

Signature

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019

GEOTECHNICAL ENGINEERING

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

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

1. Define the term percentage of air voids.
2. Differentiate the residual and transported soil.
3. Differentiate free water and held water.
4. Define ultimate bearing capacity of soil.
5. List the classification of pile foundation based on mode of transfer of loads. (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. List the importance of Soil Engineering.
2. Describe the determination of water content of soil by oven drying.
3. Explain effective pressure, pore pressure and neutral pressure.
4. List the factors affecting permeability.
5. Describe the method of wash boring soil exploration.
6. Explain the need of general exploration and detailed exploration.
7. Explain combined footing of spread foundation with sketches. (5×6 = 30)

PART — C

(Maximum marks : 60)

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

UNIT — I

- III (a) Derive the functional relationship between e , G , w and S_r . 6
 (b) Explain in detail the method of sieve analysis of coarse grained soil. 9

OR

- IV (a) A compacted soil sample with a bulk unit weight of 19.62 KN/m^3 has a water content(w) of 15%. If the specific gravity of soil is 2.65, determine the dry density, voids ratio and degree of saturation (S_r). 6
 (b) Describe the procedure of core cutter method for find out the field density of soil. 9

UNIT — II

- V (a) State Darcy's Law. 6
 (b) Describe constant head method for finding coefficient of permeability of soil. 9

OR

- VI (a) Explain the factors affecting compaction. 6
 (b) Describe the procedure of standard proctor test. 9

UNIT — III

- VII (a) Explain effect of water table in bearing capacity of soil. 6
 (b) Describe the method of standard penetration test. 9

OR

- VIII (a) List the limitations of plate load test. 6
 (b) Explain seismic refraction method. 9

UNIT — IV

- IX (a) Distinguish shallow and deep foundation. Give two examples of each. 6
 (b) Describe pile erection methods. 9

OR

- X (a) Draw the section and mark the component parts of well foundation. 6
 (b) Describe the rectification of tilt and shift with the sketch. 9