TED (10)–4006 Reg. No. .....

(REVISION—2010) Signature .....

FIFTH SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/ TECHNOLOGY—OCTOBER, 2014

GEOTECHNICAL ENGINEERING

(Common to CE, EV, WR and QS)

[*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. What do you understand by consistency limits of soil ?
2. Define co-efficient of permeability.
3. Write the concept of OMC and maximum dry density (MDD).
4. List methods of drilling bore holes for soil exploration.
5. Define allowable bearing pressure. (5×2=10)

PART—B

(Maximum marks : 30)

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

1. Using three phase diagram explain :
   (a) Bulk unit weight (c) Submerged unit weight
   (b) Dry unit weight
2. List the methods of determining co-efficient of permeability.
3. Explain how the water content affects compaction of soil.
4. Explain the difference between disturbed and undisturbed samples.
5. Draw any three different shapes of well commonly used in well foundation.
6. What are the limitations of plate load test ?
7. What are the methods of pile driving ? (5×6=30)

Marks

PART—C

(Maximum marks : 60)

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

UNIT—I

III (a) Explain method for determination of water content. 5

(b) A sample of silty clay has a volume of 14.88cm^3, a total mass of 28.81g, a dry mass of 24.83g and specific gravity of solids 2.7. Determine the void ratio and degree of saturation. 5

(c) What is field density of soil ? Describe core cutter method for determination of field density. 5

OR

IV (a) Define the term soil in soil engineering. 5

(b) Differentiate between dry sieve analysis and wet sieve analysis. 5

(c) The mass of a chunk of moist soil is 20 kg, and its volume is 0.011m^3. After drying in an oven, the mass reduces to 16.5 kg. Determine the water content and wet mass density. 5

UNIT—II

V (a) Explain variable head permeability test and obtain an equation for co-efficient of permeability. 10

(b) Write short note on sheep-foot roller. 5

OR

VI (a) The co-efficient of permeability of a soil sample was determined in a soil mechanics laboratory making use of a falling head permeameter. The data used and the test results obtained were as follows: diameter of sample = 6cm, height of sample = 15 cm, diameter of stand pipe = 2 cm, initial head = 45 cm, final head after 2 min = 30 cm. Determine the co-efficient of permeability. 10

(b) Differentiate standard proctor test and modified proctor test. 5

UNIT—III

VII (a) What are the different purposes which site investigations are done ? 5

(b) Explain the procedure for plate load test to find the bearing capacity of soil. 10

OR

VIII (a) Explain the electrical sounding method for site investigation. 10

(b) What are the assumptions made in the derivation of Terzaghi's bearing capacity theory. 5

UNIT—IV

IX (a) Differentiate strip footing and strap footing. 5

(b) Explain the classification of piles based on displacement of soil. 5

(c) Write short note on pile driving. 5

OR

X (a) What are the points to be considered for fixing the depth of footing for a shallow foundation. 5

(b) Explain the method of construction of bored piles. 10
