Seat No.

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March/ April 2026 Examination
T.Y. B.Tech. Civil Engineering
Geo technical Engineering - II
Subject code: 81518

Day and Date : Monday, 25/05/2026 **Total Marks : 70**
Time : 10:30 am to 01:00 pm

Instructions:

1. All questions are compulsory
2. Assume suitable data wherever necessary and mention it boldly.
3. Draw a neat labeled diagram wherever necessary.
4. figures to be right indicate full marks.
5. use of scientific calculates is allowed.

Q.1 Attempt following questions. **[11]**

a) Explain Rock Quality Designation. 06

b) Define necessity of soil and rock exploration. 05

Q.2 Attempt following questions. **[12]**

a) Explain Plate load test. (06)

OR

a) Explain static cone penetration test. (06)

b) A square footing 2.5mt x2.5mt is built in a homogeneous bed of sand of unit wt. 20kN/m^3 and having an angle of shearing resistance of 36°. The deapth of base of footing is 1.5mt below the ground surface. Calculate the safe load that can be carried by a footing with a factor of safety of 3 against complete shear failure. use Terzaghi's analysis. [Nc = 65.4, Nq= 49.4, Nr= 54.0]

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Q.3 Attempt the following questions. **[12]**

a) Describe the concept of settlement with neat sketches. (06)

OR

b) Explain with neat figure the shallow foundations with it's types. (06)

c) A soft normally consolidated clay layer Is 6mt thick with a natural water content of 30% The clay has saturated unit weight of 17.4 KN/m^3, a specific gravity of 2.67 and liquid limit of 40%. The ground water level is at surface of the Clay. Determine the settlement of the foundation, it the foundation load will subject to centre of clay layer to vertical stress increase of 8 KN/m^3. Take c=1. (06)

Q.4 Attempt the following. **[12]**

a) Explain concept of under-reamed piles. (6)

OR

a) Describe: a) Group action Piles. (06)

b) Group efficiency

b) A 30 cm dia. concrete pile driven into a homogeneous consolidated clay deposits [cu= 40KN/m^2; α=0.7]. If the embeded length is 10 mt. Estimate the safe load when F.o.S = 2.5. Take Nc = 9.0. (06)

Q.5 Attempt the following. **[11]**

a) Define in detail common types of the coffee dam. (06)

b) explain concept of vibroflotation. (05)

Q.6 Attempt the following. **(12)**

a) Explain slope classification in detail. (06)

b) A vertical cut is made in clay deposit [C=30 KN/m^2, ø =0, ɣ = 16KN/m^3] find maximum height of cut which can be temporarily supported. Take fe= 1 and Sn=0.261. (06)

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