

SUBJECT CODE NO:- P-334
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(Civil) Examination MAY/JUNE-2016
Geotechnical Engineering
(Revised)

[Time: Three Hours]

[Max Marks:80]

“Please check whether you have got the right question paper.”

N.B

- i) Solve any three from section A including Q.No.1 which is compulsory.
 ii) Solve any three from section B including Q.No.6 which is compulsory.
 iii) Figures to right indicate full marks.
 iv) Assume suitable data, if necessary.

Section A

- Q.1 a) What is the relative density of dry sand deposit, if it's minimum, maximum and in situ unit weight are 14, 18 and 06
16 KN/m³? 04
 b) State the characteristics of flow nets. 06
 c) Explain why the particular nature of soil makes it more difficult to use it as an engineering material. 06
- Q.2 a) Derive the expression for evolution of coefficient of permeability for the clayey soils by falling head method. 06
 b) Enlist and explain the applicable corrections in connection with sedimentation analysis using hydrometer. 06
- Q.3 a) What is vertical stress? State at least four assumptions made in Boussinesq's equation. 06
 b) Derive the relationship between bulk density, specific gravity, void ratio and degree of saturation. 06
- Q.4 a) A laboratory compaction test on a soil having specific gravity equal to 2.71 gave a maximum dry density of 1.99gm/cm³ and water content of 18.5 percent. Determine the degree of saturation, air content & percentage air voids at the maximum dry density. 06
 b) Explain laboratory consolidation test. 06
- Q.5 Write short notes on : 12
 a) Compare between standard Procter test and modified Procter test.
 b) Laplace equation for two dimensional flows through porous soil media.
 c) Thixotropy of clays.

Section B

- Q.6 a) Explain the Mohr-coulomb's theory of failure. 06
 b) State the assumptions made in Rankine's theory of lateral earth pressure. 04
 c) Explain the construction and use of new mark influence chart. 06
- Q.7 a) Explain friction circle method. 06
 b) What are factors contributing slope failure? 06
- Q.8 a) Explain stress isobars with the help of sketch. 06
 b) Derive the expression for active pressure assuming backfill as dry. Sketch a pressure distribution diagram. 06

- Q.9 a) A cylinder of soil fails under an axial vertical stress of 160KN/m^3 , when it is laterally unconfined. The failure plane makes an angle of 50° with the horizontal. Calculate the values of cohesion & angle of internal friction of soil. 06
b) Differentiate between finite and infinite slopes. 06
- Q.10 Write short notes on 12
a) Swedish slip circle method.
b) Taylor's stability number.
c) Earth pressure at rest.