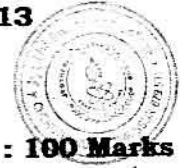


Name :

Reg. No:

FIFTH SEMESTER B.TECH DEGREE EXAMINATION, JANUARY 2013

CE 04 504 – GEOTECHNICAL ENGINEERING



Time : Three Hours

Maximum : 100 Marks

Answer all questions

Assume additional data if required

PART A

1. Differentiate between honey combed and flocculent structure (wrt soil).
2. Explain the IS classification of soil
3. Differentiate between adsorbed water and capillary water.
4. State and explain Darcy's law
5. Differentiate between consolidation and compaction.
6. Write short notes on OMC and maximum dry density.
7. Differentiate between active and passive earth pressure.
8. Write a short note on Swedish circle method.

(8 x 5 = 40)

PART B

9. Write short notes on (i) void ratio (ii) porosity (iii) Specific gravity
iv) water content v) Degree of saturation

OR

- a) A soil has a bulk unit weight of 20.11 kN/m^3 and water content of 15%. Calculate the water content if the soil partially dries to a unit weight of 19.42 kN/m^3 and the void ratio remains unchanged
- b) Determine the maximum possible void ratio for a uniformly graded sand of perfectly spherical grains

OR

Water table in a deposit of uniform sand is located at 1 m below the GS. Void ratio and specific gravity of soil particles are 0.85 and 2.7 respectively. Compute the total and effective stresses at a depth of 0.5 m and 8 m below the GS. Assume that in above water table, soil is partially saturated [$S_r = 80\%$]

11 Write short notes on (i) Coefficient of volume change (ii) Compression index

(iii) Pre consolidation pressure (iv) Coefficient of compressibility

v) Time rate of consolidation

OR

Construction of a building on a clay stratum 5 m thick [with double drainage] was completed in January 2012. Ultimate consolidation settlement of this building is estimated to be 77mm. Average settlement of this building was measured in April 2012 and was found to be 20 mm. When will 90% consolidation settlement of this building be completed?

12 Write short notes on (i) Rankine's theory

(ii) Friction circle method

iii) Taylor's stability number

OR

(a) Explain Rebhann's graphical method for the determination of active lateral earth pressure

(b) A cohesive soil has unit weight of 19.2 kN/m^3 cohesion 12 kN/m^2 and angle of internal friction 10° .

Calculate the critical height of vertical excavation that can be made without any lateral support. Also find out the total earth pressure

[4 x 15 = 60 Marks]