Printed Pages : **EAG-402**

(Following Paper ID and Roll No. to be filled in your Answer Books)										
PAPER ID :	**Roll No.**									

B.TECH.
Theory Examination (Semester-IV) 2015-16
SOIL MECHANICS

Time : 3 Hours ***Max. Marks : 100***

SECTION-A

1. Attempt All Parts 10X2=20marks

a. What do you mean by density of Soil?
b. Draw the phase diagram of Soil.
c. Define compaction of Soil.
d. Define consolidation of soil.
e. What do you mean by earth pressure?
f. List the factors for shrinkage in soil.
g. What do you mean by stability of soil?
h. Define neutral stress.
i. What do you mean by shear strength of soil?
j. Name the different soils found in India.

SECTION-B

2. **Attempt any five parts** 5X10=50 marks

a. Briefly describe the Bousinesque and Wester guards' analysis for soil and also derive them.
b. Differentiate between Active and Passive Earth Pressure.
c. How is consolidation different from compaction? What do you understand by the terms: immediate settlement, primary consolidation and secondary consolidation?
d. How can the direct shear test can be performed on the soil? What are the needs for performing the direct Shear test?
e. Briefly classify the soil.
f. A Clay sample has the void ratio of 0.63 in dry state what will be the Shrinkage limit if G=2.70
g. Differentiate between gross and net bearing capacity.
h. What are the assumptions made in the Terzaghi's bearing capacity theory? Also discuss the failure zones in Terzaghi's theory with the help of its neat sketch.

SECTION-C

Attempt any two parts 2X15=30 marks

3. For a sedimentary soil deposit, which solution is more appropriate—Boussinesq's or Westergaard's ? Why? State the assumptions involved in the Westergaard's theory. A concentrated load of 40 kN acts on the surface of a soil. Determine the vertical stress increment at points directly beneath the load up to a depth of 10 m and draw a plot for the vertical stress variation up to depth of 10 m.
4. An oven dry soil sample of volume 250 cc weighs 430 g. If the specific gravity of solids is 2.70, what is the water content when the soil becomes fully saturated without any change in its volume ? What will be the water content which will fully saturate the sample and also cause an increase in volume equal to 10% of the original dry volume ?
5. Briefly describe the Rankine's theory of Earth pressure for cohesive Soils. What is the need for casergrand test for determination of consolidation of soil?