Total No. of Pages 02 *Roll No.* .....

FOURTH SEMESTER B.Tech. ENE

MID SEMESTER EXAMINATION (March -2019)

EN 202 GEOTECHNICAL ENGINEERING

Paper Code Title of the subjest

Time: 1:30 Hours ***Max. Marks: 20***

Note: Answer all questions, Assume suitable missing data, if any

1. In a hydrometer test, the results are as follows: Gs = 2.60, temperature of water = 24 °C, and hydrometer (R) = 43 at 60 min after the start of sedimentation. What is the diameter, D, of the smallest-size particles that have settled beyond the zone of measurement at that time (that is, t = 60 min)? 2

2. Define % air voids (n_a), dry density (γ_d) , moisture content (ω) and specific gravity (G) and derive the relationship

$$\gamma_d = [(1-n_a)G\gamma_w]/ (1+\omega G)$$ 3

3. Explain the use of sedimentation analysis for analysis of fine grained soil. Enumerate there assumptions and limitations. 3

4. Quality assessment of granular sub base of a road project is proposed by conducting field density test, which test you will perform and why. 2

5. Explain Indian soil classification system for fine grained soil. 3

6. A soil profile consists of a surface layer of clay 6m thick (Y=18.0 kN/cum) and a soil layer 3m thick (Y=17.5 kN/cum) overlying an impermeable rock. The water table is at the ground surface. If the water table in the stand pipe driven into the sand layer rises 3 m

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above the ground surface, draw the plot showing the variation of total, effective and neutral stress. 3

7. The cross section and plan of a column footing are shown in Figure 1. Find the increase in vertical stress produced by the column footing at point A by constructing the Newmark's Influence chart. 4

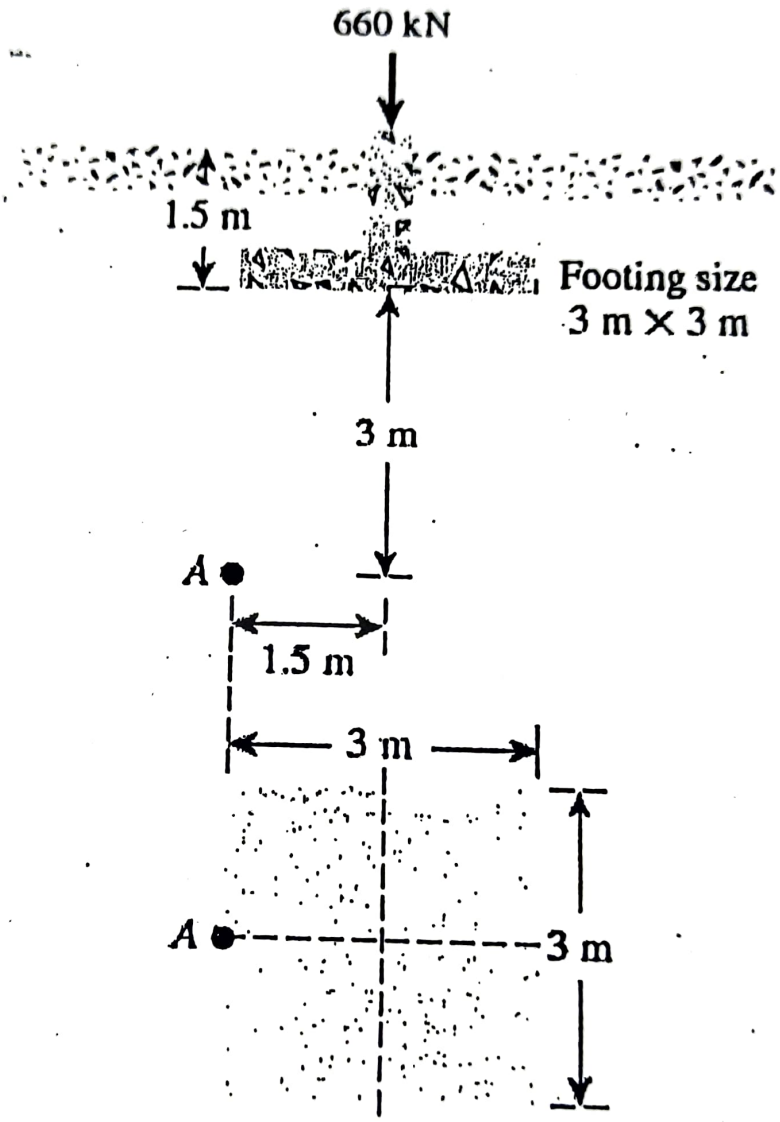

Figure: 1