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ET-501(B)(S)

B.Tech. Civil (Construction Management) / B.Tech. Civil (Water Resources Engineering)

Term-End Examination

00468

June, 2017

ET-501(B)(S) : FOUNDATION ENGINEERING

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. Assume any required data, if missing. Use of scientific calculator is permitted.*

1. (a) Discuss different types of samplers with neat sketches. 7

(b) Discuss the reasons for a soil sample's disturbance. How can this be eliminated ? 7

2. A 3·0 m square footing is located in a dense sandy soil at a depth of 2·0 m. Determine the ultimate bearing capacity for the following water table positions :

(a) At ground surface

(b) At footing level

(c) At 1 m below the footing

The moist unit weight of sand above the water table is 18 kN/m^3 and the saturated unit weight is 20 kN/m^3, $\phi = 35°$, $c = 0$, $N_q = 33$, $N_\gamma = 34{\cdot}0$. 14

3. (a) Explain the terms (i) area ratio, (ii) inside clearance, and (iii) outside clearance, with reference to soil sampler with the help of neat sketches. *8*

(b) Discuss the various types of foundations with the help of neat sketches. *6*

4. (a) State and explain the Engineering News Formula for drop hammer. Write its application in the field. *7*

(b) Discuss various types of piles with the help of neat sketches. *7*

5. A smooth retaining wall, 6 m high, retains dry granular backfill weighing 16 kN/m^3 to its level surface. The action thrust on the wall is 96 kN/m of the wall. What will be the total active thrust, if the water table comes up to the backfill surface ? Take specific gravity of backfill = 2·65. *14*

6. (a) Discuss the factors affecting bearing capacity. *10*

(b) Explain any two methods of foundation practices adopted in expansive soils. *4*

7. (a) Explain the design criteria for machine foundations. *7*

(b) Discuss various causes for settlements in foundations. *7*
