

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (CE) (Sem.-6)
FOUNDATION ENGINEERING

Subject Code : BTCE-603

M.Code : 71084

Date of Examination : 07-07-22

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer briefly :

- a) Differentiate between disturbed and undisturbed samples.
- b) Calculate depth of soil exploration for a 15-storey heavy steel building.
- c) Write the advantages of coulomb's theory.
- d) How water correction factor is applied to bearing capacity?
- e) What is Newmark's chart?
- f) Differentiate between safe bearing capacity and safe allowable bearing pressure.
- g) Distinguish between seepage and discharge velocity through soil.
- h) Mention necessity of pile foundation.
- i) What is pneumatic caisson?
- j) What are the various forces acting on a well foundation?

SECTION-B

2. What is soil exploration and what is its purpose? Explain any one method of soil exploration
3. Compute the intensities of active and passive earth pressure at a depth of 8 metres in dry cohesionless sand with an angle of internal friction of 30° and unit weight of 18kN/m^3 . What will be the intensities of active and passive earth pressure if the water table rises to ground level? Take saturated unit weight of sand 22kN/m^3 .
4. A square footing $1.2\text{m} \times 1.2\text{m}$ rests at a depth of 1m in a saturated clay layer 4m deep. The clay is normally consolidated, having an unconfined compressive strength of 40kN/m^2 . The soil has a liquid limit of 30% , $\gamma_{\text{sat}} = 17.8\text{kN/m}^3$, $w = 28\%$ and $G = 2.68$. Determine the load which the footing can carry γ safely with a factor of safety of 3 against shear. Also, determine the settlement if the footing is loaded with the safe load. Use Terzaghi's analysis for bearing capacity
5. A precast concrete pile is driven by a single acting hammer of weight 14KN with a free fall of 900mm . The final set, the average of the last three blows, is 2.75 mm . Estimate the safe load using engineering news record formula ($\text{FOS}=6$).
6. Write advantages and disadvantages of open box and pneumatic caisson.

SECTION-C

7. Write short notes on the following:
 - a) Comparison of SPT and DCPT.
 - b) Electrical resistivity method.
 - c) Floating foundation.
8. Explain various conditions for stability of well and also, explain various forces acting on well foundation.
9. A retaining wall 6m high, with a smooth vertical back is pushed against a soil mass having $c' = 40\text{kN/m}^2$ and $\phi' = 15^\circ$; $\gamma = 19\text{kN/m}^3$. What is the total Rankine passive pressure, if the horizontal soil surface carries a uniform load of 50kN/m^2 ? What is the point of application of the resultant thrust?

NOTE : Disclosure of identity by writing mobile number or making passing request on any page of Answer sheet will lead to UMC case against the Student.