A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 55102

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Fifth Semester

Civil Engineering

15UCE502 - FOUNDATION ENGINEERING

(Regulation 2015)

(IS 6403-1981 is permitted)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The number and disposition of bore holes are varied, depending upon CO1-R

   (a) Surroundings (b) Strata (c) Subsoil condition (d) Ground water

2. The methods of site investigation are dependent upon CO1-R

   (a) Climatic condition (b) Nature of engineering project

   (c) Local topography (d) All of the mentioned

3. Which of the below is the most commonly used shallow foundation? CO2-R

   (a) Strap footing (b) Spread footing (c) Combined footing (d) Raft footing

4. In conventional design, allowable bearing capacity should be taken smaller than which of the following value? CO2-R

   (a) Safe bearing capacity and Allowable bearing pressure

   (b) The pressure intensities beneath the footing

   (c) None of the mentioned

   (d) All of the mentioned

5. Under-reamed piles are generally CO3-R

   (a) driven piles (b) bored piles (c) precast piles (d) all the above.

6. The pile load test should be performed on CO3-R

   (a Working pile (b) Test pile (c) All of the mentioned (d) None of the mentioned

7. The factor that is responsible for inclination of resultant pressure to the retaining wall is CO4-R

(a) Frictional force (b) Surcharge (c) Earth pressure (d) Weight of the wall

8. Based on the assumptions of Rankine's theory, the soil mass is CO4-R

(a) Stratified (b) Submerged (c) Homogeneous (d) All of the mentioned

9. Machine foundation is subjected to CO5-R

(a) Static loads (b) Wind loads (c) Static and dynamic loads (d) Dynamic loads

10. Steining is a component of which of the below type of foundation? CO5-R

(a) Pile (b) Strap (c) Isolated (d) Well

PART – B (5 x 2= 10Marks)

11. Define site investigation. CO1- R

12. What is net safe bearing capacity? CO2 -R

13. How is the selection of pile carried out? CO3- R

14. What is surcharge angle? CO4- R

15. Define transmission tower. CO5- R

PART – C (5 x 16= 80Marks)

16. (a) Briefly explain with neat sketch Standard Penetration Test and the correction to be applied to find "N" value. CO1 -App (16)

Or

(b) Discuss the various methods of boring with neat sketch. CO1- App (16)

17. (a) Define shallow foundation. Explain the types of shallow foundation with neat sketch? CO2- App (16)

Or

(b) Compute the ultimate load that an eccentrically loaded square footing of width 2m width, an eccentricity of 0.315m can take at a depth of 0.45m in soil with $\boldsymbol{\gamma} = \mathbf{17.75}\boldsymbol{kN/m^3}$, C=9kN/m^2 and $\emptyset = \mathbf{35}°$, Nc=52, Nq=35 and Ny=42. CO2 -Ana (16)

18. (a) Explain under reamed pile foundation with neat sketch. CO3 -Ana (16)

Or

	(b)	A group of 9 piles with 3 piles in a row was driven into soft clay extending from ground level to a great depth. The diameter and length of piles were 30 cm and 10 cm respectively. The unconfined compression strength of clay is 70 kN/m^2. If the piles were spaced at 90cm centre to centre, compute the allowable load on the pile group on the basis of shear failure criteria for a factor of safety of 2.5, neglect bearing at the tip of piles, take m = 0.6 for shear mobilization around each pile.	CO3- Ana	(16)
19.	(a)	Explain with neat sketch the culmann's method of calculating active earth pressure.	CO4- U	(16)
		Or		
	(b)	Explain the effect of uniform surcharge and line load on retaining wall?	CO4 -Ana	(16)
20.	(a)	What is Well Foundation? Explain the construction procedure for well foundation?	CO5- U	(16)
		Or		
	(b)	Draw the neat sketch of a Transmission tower and indicate the parts and also explain in detail.	CO5 -U	(16)

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