

ANURAG Engineering College
(An Autonomous Institution)
III B.Tech I Semester Regular Examinations, December – 2024
GEOTECHNICAL ENGINEERING
(CIVIL ENGINEERING)

Time: 3 Hours

Max.Marks:60

Section – A (Short Answer type questions)**(10 Marks)****Answer All Questions**

	Course Outcome	B.T Level	Marks
1. Define plasticity index. What is its importance?	CO1	L1	1M
2. What is the zero air void line?	CO1	L1	1M
3. State the different modes of soil water	CO2	L1	1M
4. What is effective stress.	CO2	L1	1M
5. What are the assumptions made by Boussinesq's in deriving the expression for stress in soil due to a point load on the ground surface?	CO3	L1	1M
6. Write the formula for determination of stress distribution under a point load according to Westergaard's theory	CO3	L1	1M
7. List the types of compressibility.	CO4	L1	1M
8. Briefly explain e-p and e-log p curves.	CO4	L1	1M
9. What are the important characteristics of Mohr's circle	CO5	L1	1M
10. Define critical void ratio.	CO5	L1	1M

Section B (Essay Questions)**Answer all questions, each question carries equal marks.****(5 X 10M = 50M)**

11. A) What is the use of classification of soils? Discuss Indian standard classification system?	CO1	L2	10M
OR			
B) What are the different soil indices used in identification of soil? Describe each one. Give their uses.	CO1	L2	10M
12. A) A soil strata consists of 3 layers of thickness 1m, 1.5m and 2.0 m having the coefficient of permeability of 2×10^{-3} cm/s, 1.5×10^{-3} cm/s and 3×10^{-3} cm/s respectively. Estimate the average coefficient of permeability in the direction: (i) parallel to the bedding plane. (ii) normal to the bedding plane.	CO2	L3	10M
OR			
B) Derive an expression to determine coefficient of permeability of soil by laboratory falling head permeability test.	CO2	L3	10M
13. A) Explain how the New mark's influence chart is prepared and used.	CO3	L2	10M
OR			
B) i) Differentiate the standard proctor test and modified proctor test. ii) Mention types of rollers for field compaction. Explain any two types of rollers briefly.	CO3	L3	10M
14. A) Discuss Terzaghi's theory of consolidation by stating the various assumptions and its validity	CO4	L3	10M
OR			
B) Describe square root time fitting method.	CO4	L3	10M

15. A) Describe the direct shear test with neat sketch. What are its merits and demerits. CO5 L3 10M

OR

B) When do you use the following shear tests and give reasons:
i) shear box; ii) vane shear test; iii) unconfined compression test. CO5 L2 10M