

M.E. First Semester (Civil Engg. (Geotechnical Engg.)) (Full Time) (C.G.S. - New)

13042 : Ground Improvement Techniques : 1 SFGE 1

P. Pages : 1

AU - 3473

Time : Three Hours



Max. Marks : 80

- Notes :
1. Solve **any five** questions.
 2. All question carry equal marks.
 3. Due credit will be given to neatness and adequate dimensions.
 4. Assume suitable data wherever necessary.
 5. Diagrams and chemical equations should be given wherever necessary.
 6. Retain the construction lines.
 7. Illustrate your answer necessary with the help of neat sketches.
 8. Use of slide rule logarithmic tables, Steam tables, Moller's Chart, Drawing instrument, Thermodynamic table for moist air, Psychrometric Charts and Refrigeration charts is permitted.
 9. Use of pen Blue/Black ink/refill only for writing the answer book.

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| 1. | a) | Discuss the structure with basic building blocks of following clay minerals | 8 |
| | i) | Kaolinite | |
| | ii) | Montmorillonite | |
| | iii) | Illite. | |
| | b) | Discuss the flocculation and dispersion of clay particles in suspension. | 8 |
| 2. | a) | Discuss the engineering properties and behaviour of chemically stabilized soils. | 8 |
| | b) | Discuss the soil-lime interaction and chemical characteristics of lime treated cohesive soils. | 8 |
| 3. | a) | Discuss various laboratory tests used to analyze bituminous stabilized soils. | 8 |
| | b) | For dewatering in cohesive soils, discuss the electro osmosis method and what is flow velocity due to applied voltage. | 8 |
| 4. | a) | For deep granular deposits discuss the vibrofloatation technique of stabilization. | 8 |
| | b) | Discuss the construction procedure of stone column or sand column and their suitability in ground improvement. | 8 |
| 5. | a) | What is jet grouting, groutability ratio and various types of grout used for grouting. | 8 |
| | b) | Explain the stabilization method using lime for clayey soil, and bearing capacity of lime column. | 8 |
| 6. | a) | Enlist various equipment's used for grouting and their layout plan in the field. | 8 |
| | b) | Enlist various admixtures used in stabilization of soil & their suitability for various types of ground deposits. | 8 |
