LUKHDHIRJI ENGINEERING COLLEGE, MORBI

APPLIED MECHANICS DEPARTMENT

SYLLABUS FOR PROGESSIVE ASSESSMENT TEST ON 12/12/2023

Subject: **Geotechnical Engineering (2930603)**

Sem/Branch: **Bachelor of Engineering (Part Time- PDDC)**

Exam Date/Time: **12/12/2023 (6:30 PM Onwards)**

1. **Type of Soils, Index Properties, Inter-relationships and Soil Characterization:** Types of soil and soil formation, Geological cycle, Phase diagrams, Basic terms, Functional relationships based on index properties, Physical characterization of soil-Dry and Wet sieve analysis, Atterberg's Indices, Soil Structures, Soil Water and its types, Standard nomenclature & IS Soil Classification, Numerical. Problems/Numerical/Codes/Lab and Field Tests.
2. **Permeability and Seepage:** Darcy's law and its validity, Factors affecting permeability, Laboratory permeability tests, Permeability of stratified soil masses, Seepage pressure, Quick condition, Flow nets
3. **Compaction & Consolidation of soil:** Definitions, differentiate between compaction and consolidation, Compaction mechanism and proctor tests, field compactions methods, factors affecting compaction, Consolidation mechanism through spring analogy, fundamental definitions, Terzaghi's one dimensional
4. **Shear Strength of Soil:** Mohr's strength theory, Mohr- coulomb's strength theory, Modified Mohr coulomb's theory, shears parameters through lab and field tests based on drainage conditions, Numericals. Tests will be covered in lab sessions.
5. **Earth Pressure & Stability of Slopes:** Types of lateral earth pressure, Rankine's Rheban's/Culmann's Graphical methods, Infinite and finite slopes, Factor of safety, Type of slope failure, Limit equilibrium method, C-analysis-method of slices, Taylor's stability number, Numerical.
6. **Stress Distribution:** Causes of stresses in soil, Boussinesque's and Westergard's equation, Pressure Bulb, Stress distribution on horizontal and vertical planes, Stresses due to different shapes of footings, New-mark's influence chart, Numericals.

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HOD
Applied Mechanics Department