

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (Old) EXAMINATION – WINTER 2019****Subject Code: 150604****Date: 02/12/2019****Subject Name: Geotechnical Engineering - I****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks

- Q.1** (a) Define Compaction? Enumerate various factors affecting compaction of soil. **07**
(b) Explain with neat sketch the geological cycle? Give names of different types of soils formed in nature. **07**

- Q.2** (a) Explain the procedure for standard proctor test for determination of Maximum Dry Density and Optimum Moisture content of soil? **07**
(b) A standard proctor test was conducted on a soil with following observations. If the volume of the mould is 950 cubic centimeter, and the specific gravity of soil solids is 2.65, draw compaction curve, 80% as well as 100% saturation lines. **07**

Water Content (%)	7.7	11.5	14.6	17.5	19.5	21.2
Mass of Wet Soil (kg)	1.7	1.89	2.03	1.99	1.96	1.92

OR

- (b) Define Atterberg's Limits. Explain procedure for determination of Plastic Limit of soil? **07**
- Q.3** (a) Define (i) Coefficient of Volume Compressibility (ii) Coefficient of Volume Change (iii) Coefficient of Uniformity (iv) Coefficient of Curvature. **07**
(b) Explain with help of a neat sketch method of determination of coefficient of consolidation? **07**

OR

- Q.3** (a) Define Consolidation? Enumerate assumptions for Terzaghi's One Dimensional theory? **07**
(b) Define (i) Void Ratio (ii) Saturated Density (iii) Submerged Unit Weight (iv) Degree of Saturation **07**
- Q.4** (a) Explain Triaxial test with respect to drainage conditions? Enumerate conditions for their respective use? **07**
(b) Explain method of determination of Coefficient of Permeability for sands? **07**

OR

- Q.4** (a) Explain with usual notations the Mohr Coulomb Strength theory with help of appropriate sketches? **07**
(b) Explain with help of neat figures different structures of soil as encountered in field conditions? **07**

- Q.5** (a) Describe the IS classification method for soils with appropriate notations? **07**
(b) Explain the method for determination of Relative density of cohesionless soils? **07**

OR

- Q.5** (a) Define the following (i) Free water and held water (ii) Structural water and absorbed water (iii) Capillary water **07**
(b) Explain Darcy's law and give conditions for its validity? **07**
