ROLL NO:	

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

PRESIDENCY UNIVERSITY, BENGALURU

SCHOOL OF ENGINEERING

Weightage: 20 % Max Marks: 40 Max Time: 1 hr. Saturday, 22nd September, 2018

TEST – 1

Odd Semester 2018-19 Course: **CIV 210 Soil Mechanics** V Sem. Civil

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Instruction:

(i) Read the question properly and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and Non-programmable calculators are permitted.

Part A

(3 Q x 4 M = 12 Marks)

1. List and define index properties of soil?
2. Define a) void ratio , b) Porosity, c) Percentage air voids, d) Degree of saturation
3. List and explain briefly regional soil deposits of India?

Part B

(2 Q x 8 M = 16 Marks)

4. Bulk unit weight of soil is 19.80 kN/m^3. If the specific gravity of soil Particles is 2.70 and water content is 11%, find the void ratio, dry density and degree of saturation. Assume unit weight water = 9.81 kN/m^3.
5. Draw the plasticity chart incorporated in Indian standard soil classification system and explain briefly with group symbols with abbreviations used in the chart.

Part C

(1 Q x 12 M = 12 Marks)

6. The following results were obtained from liquid limit test. Find the liquid limit. Also determine plasticity index, consistency index and liquidity index. Plastic Limit was found to be 24% and natural water content was 32 %.

No. of blows	55	46	32	22	15
Water content%	24	30	35	41	49

ROLL NO:

PRESIDENCY UNIVERSITY, BENGALURU

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TEST 2

Odd Semester: 2018-19 | **Date**: 27 November 18

Course Code: CIV 210 | **Time**: 1 Hour

Course Name: Soil Mechanics | **Max Marks**: 40

Branch & Sem: CIV & V Sem | **Weightage**: 20%

Instructions:

(i) Read the question properly and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and Non-programmable calculators are permitted

Part A

Answer **all** the Questions. **Each** question carries **four** marks. (3x4=12)

1. Write the assumptions of Darcy's law.
2. Differentiate between compaction and consolidation.
3. Write any four properties of flow nets.

Part B

Answer **all** the Questions. **Each** question carries **eight** marks. (2x8=16)

4. Explain the factors affecting permeability of soil.
5. The results of a constant head permeability test on fine sand are as follows: area of the soil specimen 180 cm^2, length of specimen 300 mm, and constant head maintained 400 mm, and flow of water through the specimen 300mL in 8 min. Determine the coefficient of permeability.

Part C

Answer the Question. Question carries **twelve** marks. (1x12=12)

6. The following are the results of compaction test.

Water content %	12	14	16	18	20	22
Weight of wet soil kg	1.68	1.85	1.91	1.87	1.87	1.85

Volume of mould =950ml, Specific gravity of soil solids = 2.70. Find the OMC and MDD.

. Find the degree of saturation at MDD.

Roll No.												

PRESIDENCY UNIVERSITY
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END TERM FINAL EXAMINATION

Odd Semester: 2018-19 | **Date**: 26 December 2018

Course Code: CIV 210 | **Time**: 2 Hours

Course Name: Soil Mechanics | **Max Marks**: 80

Programme & Sem: CIV & V Sem | **Weightage**: 40%

Instructions:

(i) Read the question properly and answer accordingly.
(ii) Question paper consists of 3 parts answer all questions.
(iii) Scientific and Non-programmable calculators are permitted
(iv) Assume any missing data suitably.

Part A

Answer **all** the Questions. **Each** question carries **five** marks. (4Qx5M=20)

1. Define thixotropy with neat sketch.
2. Define normally consolidated soil and under consolidated soil.
3. Define compression index? Write its equation.
4. Write the advantages triaxial shear test.

Part B

Answer **all** the Questions. **Each** question carries **ten** marks. (4Qx10M=40)

5. Briefly explain with coulombs' equation and mohrs- coulombs failure envelops.
6. Explain with neat sketch of determination of pre consolidation pressure by casagrande method.
7. Explain in detail various factors affecting shear strength of soil.
8. A saturated clay layer is 10m thick underlayed by impervious strata. Natural water content of clay is 45%, liquid limit is 55%, what will be the consolidation settlement of clay if the foundation load increased by 60% of the initial overburden pressure. The clay is normally consolidated with G = 2.65.

Part C

Answer the Question. Question carries **twenty** marks. (1Qx20M=20)

9. The following results were obtained at failure in series of consolidated undrained triaxial tests with pore water pressure measurement, on specimens of saturated clay. Determine the values of the effective stress parameters c' & ϕ' by drawing Mohr circles.

Samples	Confining pressure σ_3 kN/m^2	Deviator stress $\sigma_1 - \sigma_3$ kN/m^2	Pore pressure U kN/m^2
1	150	192	80
2	300	341	154
3	450	504	222