Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY
Winter Examination-2015

Subject Name : Geotechnical Engineering - I

Subject Code : 4TE05GTE1 **Branch : B.Tech(Civil)**

Semester :5 Date :27/04/2016 Time :02:30 To 05:30 Marks :70

Instructions:

(1) Use of Programmable calculator & any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

Q-1 Attempt the following questions: (14)

a)	Which code is used for pycnometer bottle to find water absorption?	1
b)	A simple soil sample has porosity of 30 % and Specific gravity 2.7. find its void ratio.	1
c)	Find the dry density of the above data.	1
d)	What is consistency index ?	1
e)	What is toughness index ?	1
f)	What is sensitivity of soil ?	1
g)	As per IS classification give the size of gravel.	1
h)	Define Aeolian Soils	1
i)	What is Residual soil?	1
j)	What do you mean by Specific gravity?	1
k)	Give the definition of porosity	1
l)	Define Seepage	1
m)	Give the definition of Degree of saturation	1
n)	What is Seepage velocity?	1

Attempt any four questions from Q-2 to Q-8

Q-2 Attempt all questions (14)

a)	What do you mean by consistency of soils ? How is it determined ?	**6**
b)	Write the differences between coarse grained soils and fine grained soils.	**4**
c)	Compare between Flocculent and dispersed structures.	**4**

Q-3 Attempt all questions (14)

a)	State and explain factors affecting permeability.	**7**
b)	Explain sand replacement method to find field density of soil	**7**

Q-4		**Attempt all questions**	**(14)**
	a)	Write differences between compaction and consolidation of soil.	**6**
	b)	Describe the spring analogy theory for primary consolidation. What are its uses?	**8**
Q-5		**Attempt all questions**	**(14)**
	a)	Explain modified Mohr-Coulomb theory.	**7**
	b)	State Stoke's law. What is its use in sedimentation analysis?	**7**
Q-6		**Attempt all questions**	**(14)**
	a)	Explain standard proctor test to determine MDD and OMC in the laboratory.	**7**
	b)	Describe total stress, effective stress and neutral stress.	**7**
Q-7		**Attempt all questions**	**(14)**
	a)	Derive Laplace equation for 2-D flow through soil.	**7**
	b)	Enlist the various soil classification systems and explain the textural classification	**7**
Q-8		**Attempt all questions**	**(14)**
	a)	Explain void ratio and effective stress relation for normally consolidated soil.	**7**
	b)	What is quick sand condition?	**4**
	c)	Discuss types of rollers used for compaction	**3**