Q.P. Code: 18CE0154 **R18**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations August-2021

SOIL MECHANICS

(Agricultural Engineering)

Time: 3 hours Max. Marks: 60

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	**a**	Define Plasticity index.	**2M**
	b	Write the formula for falling head permeability test. Explain the terms.	**2M**
	c	What is relative compaction?	**2M**
	d	Expansion index.	**2M**
	e	Write the merits and demerits of vane shear test.	**2M**

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	**a**	Explain the phenomenon of formation and transportation of soils.	**5M**
	b	Explain with sketches of various types of soil structures.	**5M**
		OR	
3	**a**	Explain the formation of soil by weathering in detail.	**5M**
	b	Discuss the characteristics and construction of kaolinite and Illite minerals groups.	**5M**

UNIT-II

4	What are the different methods for determination of coefficient of permeability in a laboratory? Explain any one method.	**10M**
	OR	
5	A falling head permeability test was performed on a sample of clean, uniform sand. One minute was required for the initial head of 100cm to fall to 50cm in the stand pipe of cross-sectional area 1.50cm2. If the sample was 4cm in diameter and 30cm long, calculate the coefficient of permeability of sand.	**10M**

UNIT-III

6	Derive an expression for vertical stress at a point due to a point load, using Boussinesq's theory.	**10M**
	OR	
7	A concentrated load of 2000kN is applied at the ground surface. Determine the vertical stress at a point p which is 6m directly below the load. Also calculated the vertical stress at a point which is at a depth of 6m but at a horizontal a depth of 5m from the axis of the load.	**10M**

UNIT-IV

8	Discuss the Terzaghi's theory of consolidation, state the various assumptions and their validity.	**10M**
	OR	
9	Obtain the differential equation defining the one-dimensional consolidation as given by Terzaghi listing the various assumptions.	**10M**

UNIT-V

10	Describe the direct shear test. What are merits and demerits?	**10M**
	OR	
11	Describe the vane shear test with a neat sketch.	**10M**

END