Q.P. Code: 18CE0116 **R18**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year I Semester Regular Examinations Feb-2021

GEOTECHNICAL ENGINEERING

(Civil Engineering)

Time: 3 hours Max. Marks: 60

PART-A

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

1	a	State Darcy's law	2M
	b	Write short notes on zero air void line.	2M
	c	Define equation for vertical stress under a corner of rectangular area.	2M
	d	List out various types of slope failures.	2M
	e	Write short notes on Soil exploration.	2M

PART-B

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

UNIT-I

2		Explain the process of soil formation by weathering in details.	10M

OR

3	a	Write short notes on Index Properties of soils	4M
	b	Explain in detail the laboratory method of dry sieve analysis of coarse-grained soils.	6M

UNIT-II

4	a	The Maximum dry density of a sample by the light compaction test is 1.78g/ml at an optimum water content of 15%. Find the air voids and degree of saturation G=2.67.What would be the corresponding value of dry density on the zero air voids at optimum moisture content.	5M
	b	An earth embankment is compacted at a water content 18%.to a bulk density of 19.2 kN/m^3. If the specific gravity of the sand is 2.7 find the void ratio and the degree of saturation of compacted embankment.	5M

OR

5		Explain the procedure of Sand replacement method with neat sketch.	10M

UNIT-III

6	a	Explain the concept of 'Westergaards theory' in soils.	5M
	b	What do you understand by 'Pressure bulb'? Illustrate with sketches.	5M

OR

7		Develop an expression for the vertical stress at a point due to a point load, using Boussinesq's theory.	10M

UNIT-IV

8 A canal is to be excavated through a soil with c = 15 kN/m^2, $\Phi = 20^o$, e = 0.9 and G = 2.67. The side slope is 1 in 1. The depth of the canal is 6 m. determine the factor of safety with respect to cohesion when the canal runs full. What will be the factor of safety if the canal is rapidly emptied? **10M**

OR

9 **a** What are the factors causes the slope failures? **5M**

b Explain different types of slope failures with neat sketches **5M**

UNIT-V

10 **a** Explain various types of soil samples. **5M**

b List out various design features affecting the sample disturbance. **5M**

OR

11 **a** Describe in detail execution of soil exploration program. **5M**

b Explain various salient features of a soil exploration report. **5M**

END