Q.P. Code: 20CE0114 **R20**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year II Semester Regular Examinations October-2022

GEOTECHNICAL ENGINEERING

(Civil Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	How soils are formed? Describe briefly the factors affecting the soil formation.	L1	6M
	b	What are the different types of soil structures which can occur in nature? Describe briefly.	L1	6M

OR

2	a	Define and explain: Liquid limit; Plastic limit; Shrinkage limit; and Plasticity Index.	L2	6M
	b	A soil has a liquid limit of 45%, plastic limit of 20% and flow index of 50%. Determine its toughness index. If the natural water content is 25%, comment on the state of its consistency. Also, classify the soil as per IS Classification if the fraction passing through 75-micron sieve is 60%.	L2	6M

UNIT-II

3	a	What are the factors affecting compaction? Explain briefly.	L2	6M
	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.	L2	6M

OR

4	a	What is consolidation? Describe briefly various types of consolidation of soils.	L2	6M
	b	In a consolidation test the following results have been obtained. When the load was changed from 50 kN/m^2 to 100 kN/m^2 , the void ratio changed from 0.70 to 0.65. Determine compression index, coefficient of volume change and coefficient of consolidation in mm^2 /sec.	L4	6M

UNIT-III

5	a	What are the assumptions and limitations made in Boussinesq's theory?	L2	6M
	b	What do you understand by 'Pressure bulb'? Illustrate with sketches.	L2	6M

OR

6	a	Explain the Mohr-Coulomb strength theory.	L2	6M
	b	Explain the procedure of Triaxial Test with neat sketch.	L2	6M

UNIT-IV

7	a	What are the factors causes the slope failures?	L1	6M
	b	Explain different types of slope failures with neat sketches.	L2	6M

OR

8	a	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?	L3	6M
	b	Explain Taylor's stability number.	L2	6M

UNIT-V

9	a	What are the different stages in sub soil exploration?	L2	6M
	b	Explain various uses of site investigations.	L2	6M

OR

10		Give a detailed account on how Standard Penetration Test is conducted. What are the relevant corrections applied to SPT number?	L2	12M

*** END ***