School of Engineering

B.TECH Civil Engineering
Semester End Examination - Jun 2024

Duration : 180 Minutes
Max Marks : 100

Sem IV - G1UA401B - BCE01T3403 - Geotechnical Engineering

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1)	Discuss about frost heave.	K1(2)
2)	Explain the typical range of co-efficient of permeability for gravel,sand, silt and clay.	K2(4)
3)	A clayey soil has saturated moisture content of 15.8%. The specific gravity is 2.72. Its saturation percentage is 70.8%. The soil is allowed to absorb water. After sometime the saturation increased to 90.8%. Determine the water content of the soil in the latter case.	K2(6)
4)	Infer the utilization of flow net in various purposes.	K3(9)
5)	Illustrate the experimental technicalities of the standard proctor test with required figures	K3(9)
6)	Explain in detail the procedure of Modified Proctor Compaction test.	K5(10)
7)	A water tank is supported by as ring foundation having outer diameter of 10m and inner diameter of 7.5m. The ring foundation transmits uniform load intensity of 160 kN/m2. Compute the vertical stress induced at adepth of 4m, below the centre of ring foundation using Boussinesq and Westergaard's analysis considering mu=0.	K4(12)
8)	A granular soil deposit is 7m deep over an impermeable layer. The ground water table is 4m below the ground surface. The deposit has a zone of capillary rise of 1.2m with a saturation of 50%. Plot the variation of total stress, pore water pressure and effective stress with the depth of deposit, e=0.6 and G = 2.65	K5(15)
9)	Derive the Westergaard's solution that are rigid materials in a homogenous soil mass.	K5(15)
10)	Derive the relation of capillary rise in small diameter tubes with neat sketch.	K6(18)