Seat No.:		Q. Paper Code: FTC-A-001	SET	A

Fabtech Technical Campus, College of Engineering & Research, Sangola

(An Autonomous Institute)

Geotechnical Engineering

Academic Year: -2025-26, Semester-I

Advanced Soil Mechanics (25PCE11171)

Regular End Semester Examination Winter 2025-26 [Dec./Jan]

Class:	F. Y. M. Tech.	Day & Date:	Thursday,01/01/2026
Duration:	03 Hrs.	Max. Marks:	60 Marks
Time:	11:00 AM TO 02:00 PM		

Instructions:
1) All Questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagram wherever necessary.
4) Make suitable assumptions if necessary and state it clearly.
5) Use of non-programmable calculator is allowed.

Q. No.	Questions	Marks	CO	BL
Q. 1	**Attempt any two of the following**	**12**		
1	Classify soils based on their mineralogical composition.	6	1	2
2	Explain the mineralogy and structure of clay minerals.	6	1	3
3	What is soil structure? Discuss different types of soil structures.	6	1	2
Q. 2	**Attempt any two of the following**	**12**		
1	Discuss the use and limitations of Westergaard's theory.	6	2	3
2	Explain Boussinesq's theory for stress distribution.	6	2	2
3	What is an isobar? Explain with a neat sketch.	6	2	3
Q. 3	**Attempt any two of the following**	**12**		
1	Explain the role of pore pressure in saturated soils.	6	3	3
2	Explain vertical and lateral effective stresses with examples.	6	3	4
3	Discuss the significance of effective stress in soil stability analysis.	6	3	3
Q. 4	**Attempt any two of the following**	**12**		
1	Explain different laboratory methods for determining permeability.	6	4	3

2	Explain the concept of hydraulic gradient.	6	4	3
3	Differentiate between steady and transient flow conditions.	6	4	4
Q. 5	**Attempt any two of the following**	12		
1	Define and explain pre-consolidation pressure.	6	5	3
2	Explain pressure-void ratio relationships.	6	5	4
3	Derive Terzaghi's one-dimensional consolidation equation.	6	5	5