ROLL NO. _____

BABU BANARASI DAS
INSTITUTE OF TECHNOLOGY & MANAGEMENT, LUCKNOW

B.TECH, BRANCH-CIVIL ENGINEERING, YEAR-3RD YEAR

(5TH SEM), First Sessional Examination 2025-26

GEOTECHNICAL ENGINEERING (BCE-501)

Duration: 01:30 Hrs **Faculty Name: Mr. Ashish Verma** **Max. Marks: 20**

Note:
(i) **No student will be allowed to leave the examination Room before end of exam.**
(ii) **Mention Question number/section correctly.**
(iii) **Be precise in your answer.**

Following are the course outcomes of the subject:

CO Code	Course Outcome (CO)	Bloom's Level
BCE501.1	Classify the soil and determine its Index properties.	L3
BCE501.2	Evaluate permeability and seepage properties of soil.	L3
BCE501.3	Interpret the compaction and consolidation characteristics & effective stress concept of soil	L3
BCE501.4	Determine the vertical and shear stress under different loading conditions and explain the phenomenon of soil liquefaction.	L3
BCE501.5	Interpret the earth pressure and related slope failures.	L3

Section: A

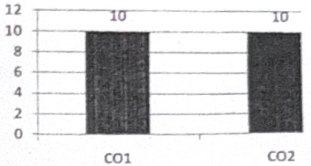
1. Attempt all question: **(4 x 1 = 4)**

Q.No.	Questions	Marks	CO	BL
a)	List out common laboratory method to determine water content.	1	BCE501.1	L1
b)	Explain permeability of soil.	1	BCE501.2	L2
c)	Explain the plasticity index.	1	BCE501.1	L2
d)	What do you understand by residual soils and transported soils?	1	BCE501.2	L1

Section-B

Q. No.		Question (Attempt Any one part from each question)	Marks	CO	BL
			(4X4=16)		
2.	A	Explain the process of sedimentation analysis in detatil and pre treatment , post treatment processes involved in it.	4	BCE 501.1	L2
		OR			
	B	Explain the following i) Thixotropy of clays ii) held water	4		L2
3.	A	A soil sample has a porosity of 40 per cent. The specific gravity of solids is 2.70. calculate i) Voids ratio ii) Dry density and iii) Unit weight if the soil is completely saturated.	4	BCE 501.2	L3
		OR			
	B	A sample of sand has a volume of 1000ml in its natural state. Its minimum volume when compacted is 840ml. When gently poured in a measuring cylinder, its maximum volume is 1370ml. Calculate the relative density.	4		L3
4.	A	A partially saturated sample from a borrow pit has a natural moisture content of 15% and bulk unit weight of 1.9 g/cc. The specific gravity of solids is 2.70. Calculate the degree of saturation and void ratio. What will be the unit weight of the sample on saturation ?	4	BCE 501.1	L3
		OR			
	B	A soil sample has a porosity of 40 percent and is fully saturated . The specific gravity of soil solids is 2.65 . Calculate the saturated unit weight and submerged unit weight.	4		L3
5.	A	Define Darcy's law? Also write the assumptions involved in it.	4	BCE 501.2	L1
		OR			
	B	What do you mean by consistency of soil ? Draw Atterberg curve .	4		L1

Course Outcome Wise Marks



BLOOM'S LEVEL DISTRIBUTION



Checked By (Head of Department)