Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Mid - Term Examinations – October 2025

Date: 09-10-2025 **Time:** 02.00pm to 03.30pm

School: SOE	**Program:** B. Tech	
Course Code : CIV3027	**Course Name:** Foundation Engineering	
Semester: V	**Max Marks**: 50	**Weightage**: 25%

CO - Levels	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Marks	**14**	**17**	**19**	**-**	**-**

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. **5Q x 2M=10M**

1	List the various methods of slope stability analysis.	**2 Marks**	**L1**	**CO1**
2	Explain infinite slope and give examples.	**2 Marks**	**L1**	**CO1**
3	Write the Boussinesq's Formula for Line Loads.	**2 Marks**	**L1**	**CO2**
4	List any four assumptions made in Rankine's theory.	**2 Marks**	**L1**	**CO3**
5	Active and Passive earth pressure are the pressures which are exerted on the retaining wall. Amongst them, which exerts more pressure and justify your answer.	**2 Marks**	**L1**	**CO3**

Part B

Answer the Questions. **Total Marks 40M**

6.	**a.**	A canal is constructed for supplying water from Bhadra dam and it is 5 meter deep with side slopes of 1:1. The properties of soil are c=20 kN/m2, $\varphi=10^0$, e=0.8 and G=2.8. If Taylor's stability number is 0.108, compute the factor of safety with respect to cohesion, when canal runs full. Also determine the factor of safety with respect to cohesion, for sudden drawdown condition with Taylor's stability number 0.137.	**8 Marks**	**L3**	**CO 1**
	b.	Determine the factor of safety of an embankment, 25 m high, and having a slope of 40 degrees. Assume c=40 kPa, φ=10 degrees, γ_{sat}=18 kN/m^3 and Taylor's stability number, Sn=0.097.	**2 Marks**	**L3**	**CO 1**
		Or			
7.	**a.**	Explain the difference between Boussinesq's and Westergaard's theories.	**10 Marks**	**L2**	**CO 1**

8.	**a.**	Compute the stresses and draw an Isobar diagram for pressure Intensity, σz=0.1Q.	**15 Marks**	**L3**	**CO 2**
		Or			
9.	**a.**	A concentrated load of 50 kN acts on the surface of the soil. Determine the vertical stress variation at points directly beneath the load up to a depth of 10 m and draw a plot. Also plot the variation of vertical stress due to load on horizontal planes at depths of 1 m and 3 m up-to a horizontal distance of 3 m on either side of the center. Use Boussinesq's theory for point loads.	**15 Marks**	**L3**	**CO 2**

10.	**a.**	Develop the expression for Rankine's earth pressure theory for cohesion less soil for active case.	**15 Marks**	**L2**	**CO 3**
		Or			
11.	**a.**	Develop the expression for Rankine's earth pressure theory for cohesion less soil for passive case.	**15 Marks**	**L2**	**CO 3**