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Bengaluru

Mid Term Examinations - October 2026

Date: 07/10/2026 **Time:** 09:30 AM - 11:00 AM

Course Code: CIV2514 **Course Name:** Foundation Engineering

Semester: Fifth Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2
Marks	50	40

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	List any four types of loading considered for vertical stress analysis.	2	CO2	BT1
2	Write the total earth pressure under at-rest condition.	2	CO2	BT1
3	Explain an Isobar which is very important for design of foundations.	2	CO2	BT1
4	Explain lateral earth pressure.	2	CO2	BT1
5	List the types of Earth pressure.	2	CO2	BT1

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	A concentrated load of 2000 kN is applied at the ground surface. Determine the vertical stress at a point P which is 6 m directly below the load. Also calculate the vertical stress at a point R which is at a depth of 6 m but at a horizontal distance of 5 m from the axis of the load. Use Boussinesq's theory for point loads.	10	CO1	BT3
7	Draw an Isobar for 0.1Q.	10	CO1	BT3

PART C: Answer Any 1 Following Questions. 15 M

Q.N.	Questions	M	CO	BT
8	A homogeneous soil slope of height 12 m is inclined at 1 vertical to 2 horizontal (1V : 2H). The soil forming the slope has the following properties: Cohesion, c = 25 kN/m² Angle of internal friction, φ = 20° Unit weight of soil, γ = 18 kN/m³ A circular failure surface passing through the toe of the slope is assumed. Determine the factor of safety (FOS) by Fellenius method (Swedish Circle Method). Comment on the stability of the slope based on the computed FOS.	15	CO1	BT3
9	Three parallel strip footings 3 m wide each and 5 m apart center to center transmit contact pressures of 200, 150 and 100 kN/m2 respectively. Calculate the vertical stress due to the combined loads beneath the centers of each footing at a depth of 3 m below the base. Assume the footings are placed at a depth of 2 m below the ground surface. Use Boussinesq's method for line loads	15	CO1	BT3

PARTD: Answer Any 1 Following Questions. 15 M

Q.N.	Questions	M	CO	BT

10	Derive the expression for Earth pressure at rest condition.	15	CO2	BT3
11	With a neat sketch explain the different types of lateral earth pressure and describe the variation of earth pressure with wall movement.	15	CO2	BT3