

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(MID SEMESTER EXAMINATION)

CLASS: BTECH  
BRANCH: CIVIL

SEMESTER : V/VII/ADD  
SESSION : MO/2025

SUBJECT: CE419 ADVANCED GEOTECHNICAL ENGINEERING

TIME: 02 Hours

FULL MARKS: 25

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates
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		CO	BL
Q.1(a)	Make a list of methods of soil exploration.	[2] 1	I
Q.1(b)	Briefly describe Standard Penetration Test.	[3] 1	III
Q.2(a)	What are Geophysical exploration ?	[2] 1	I
Q.2(b)	What are the different types of samples ? Discuss in detail.	[3] 1	III
Q.3(a)	What is Newmark's influence chart ?	[2] 2	II
Q.3(b)	A concentrated point load of 200 kN acts at the ground surface. Find the intensity of vertical pressure at a depth of 10 m below the ground surface, and situated on the axis of the loading. What will be the vertical pressure at a point at a depth of 5 m and at a distance of 2 m from the axis of loading ? Use Boussinesq analysis.	[3] 2	V
Q.4(a)	What do you understand by total and differential settlement ?	[2] 2	II
Q.4(b)	Define pressure bulb. Draw and explain isobar corresponding to a concentrated load.	[3] 2	III
Q.5(a)	Define Active earth pressure and Passive earth pressure.	[2] 3	II
Q.5(b)	Given, angle of internal friction and Poisson's ratio of a soil are $30^\circ$ and 0.4 respectively. Find the coefficients of active earth pressure, passive earth pressure and earth pressure at rest.	[3] 3	V

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