



**DEPARTMENT OF CIVIL ENGINEERING
INTEGRAL UNIVERSITY, LUCKNOW
GEOTECHNICAL LAB**

This course provides a scientific and engineering basis for understanding soil issues and problems. The design of a structure which is economical and safe to construct, is durable and has low maintenance costs, depends upon an adequate understanding of the nature of the ground. This understanding comes from an appreciation of the distribution of the materials in the ground, and their properties and behavior under various influences and constraints during the construction and lifetime of the structure. An adequate and properly structured site investigation is therefore an essential part of any civil engineering or building project.

S.NO.	APPARATUS NAME	IMAGE	DISCRIPTION
1	PYCNOMETER FOR SPECIFIC GRAVITY OF SOIL IS: 2720-3		The Pycnometer is used for determination of the specific gravity of solid particles of both fine grained and coarse grained soils. The specific gravity of solids is determined using the relation:



2



**DENSITY BOTTLE
IS: 2720-3-1**



Density bottle is used to determine the specific gravity of soil fraction passing 4.75 mm I.S sieve by density bottle

<p>3</p>	<p>PROCTOR TEST MOULD IS: 2720-7</p>		<p>The proctor instruments are used to achieve maximum dry density and optimum moisture content in lab (controlled condition & efforts).</p>
<p>4</p>	<p>CORE CUTTER APPARATUS IS: 2720-29</p>		<p>The apparatus is used to determining the dry density of in-situ soil (generally is sandy soil).</p>

<p>5</p>	<p>SAND CONE APPARATUS IS:2720-28</p>	 <p>A blue sand cone apparatus is shown, consisting of a cylindrical body mounted on a square base. A label at the top left of the image reads "SAND CONE APPARATUS IS: 2720-28".</p>	<p>The apparatus is used to determine in-situ density of soil.</p>
<p>6</p>	<p>PERMEABILITY OF SOIL TEST (FALLING HEAD METHOD) IS: 2720-17</p>	 <p>The image shows a falling head permeability test apparatus. It features a vertical glass tube assembly mounted on a wall, with a sample container on a table below it. The setup is used for determining the permeability of soil samples in a laboratory.</p>	<p>The apparatus is used to determine the permeability of the sample by falling head method in laboratory.</p>

7	TRIAXIAL TEST APPARATUS IS: 2720-11		The apparatus is used to determine the shear strength and angle of repose of a soil sample.
8	CONSOLIDATION TEST APPARATUS IS: 2720-15		The apparatus is useful in obtaining the required data of coefficient of consolidation recompression.

<p>9</p>	<p>CASAGRANDE APPARATUS FOR P.I OF COHESIVE SOIL IS: 2720-5</p>		<p>The apparatus is use to determine the index properties of the soil sample.</p>
<p>10</p>	<p>VIBRATORY TABLE (FOR R.D. OF COHESSIONLESS SOIL) IS:2792</p>		<p>The apparatus to be used for maximum and minimum relative density of given soil sample.</p>

11	DIRECT SHEAR TESTING MACHINE IS: 2720-13	 A blue direct shear testing machine is shown in a laboratory setting. The machine has a sturdy blue frame with a central vertical shaft and a horizontal crossbar. A blue cabinet is positioned in front of the machine. The background shows a typical laboratory environment with windows and other equipment.	It is used to determine the shearing strength of the soil sample
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