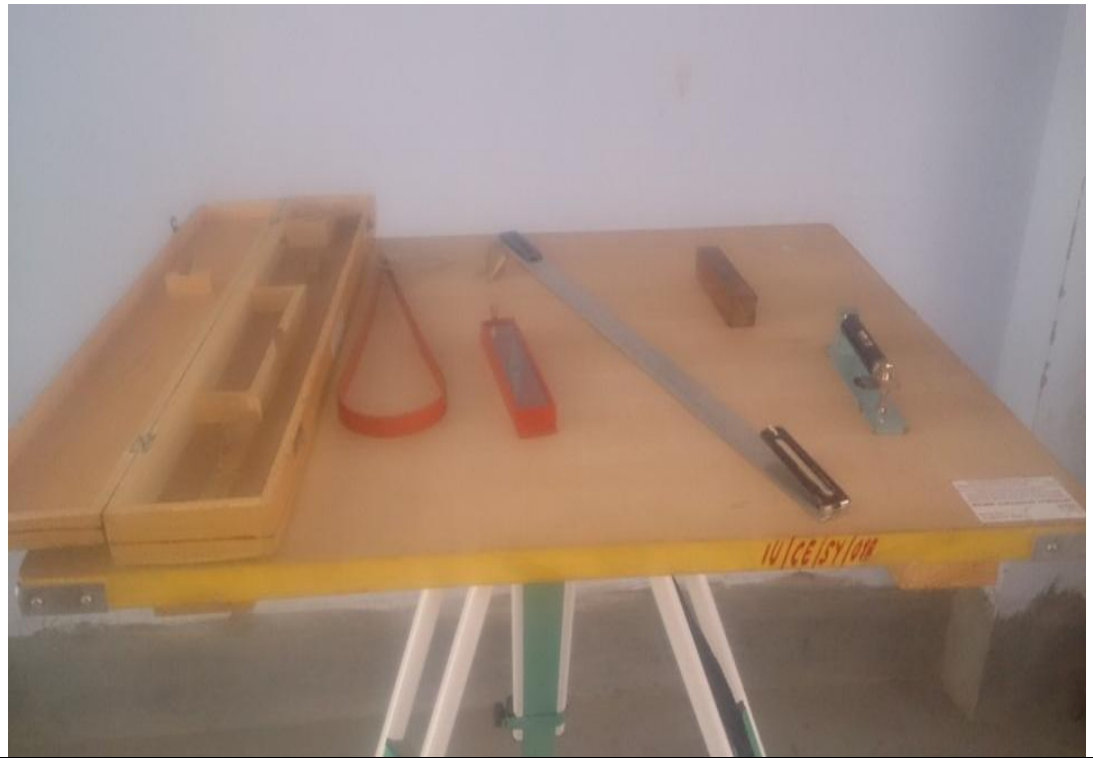
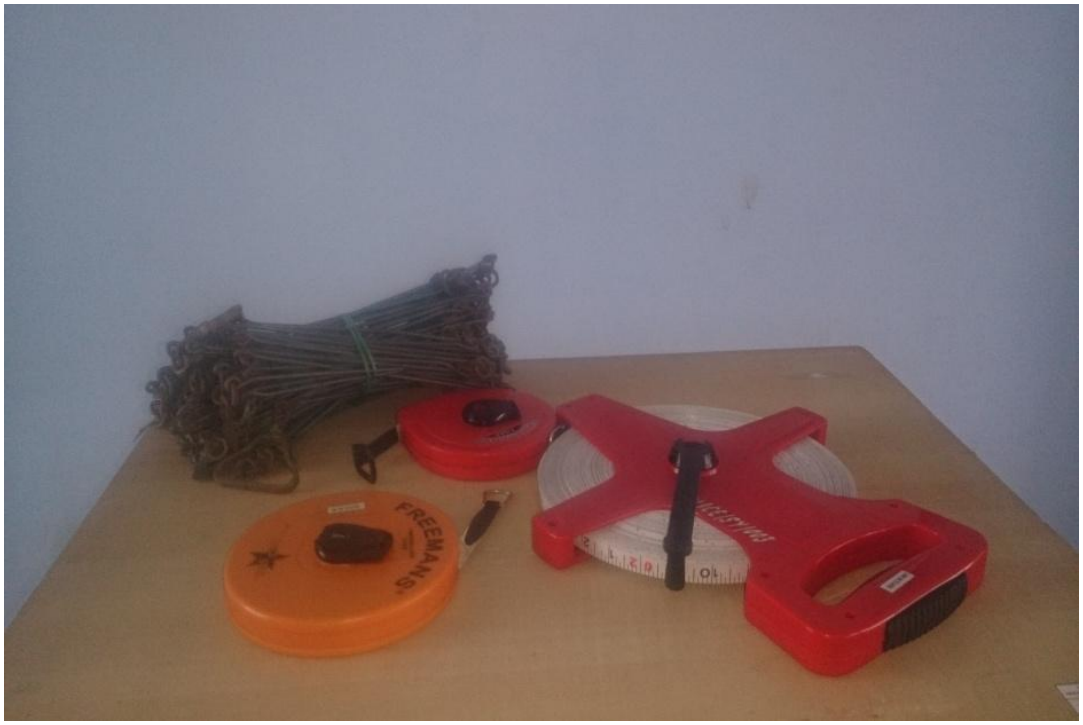
CIVIL ENGINEERING DEPARTMENT

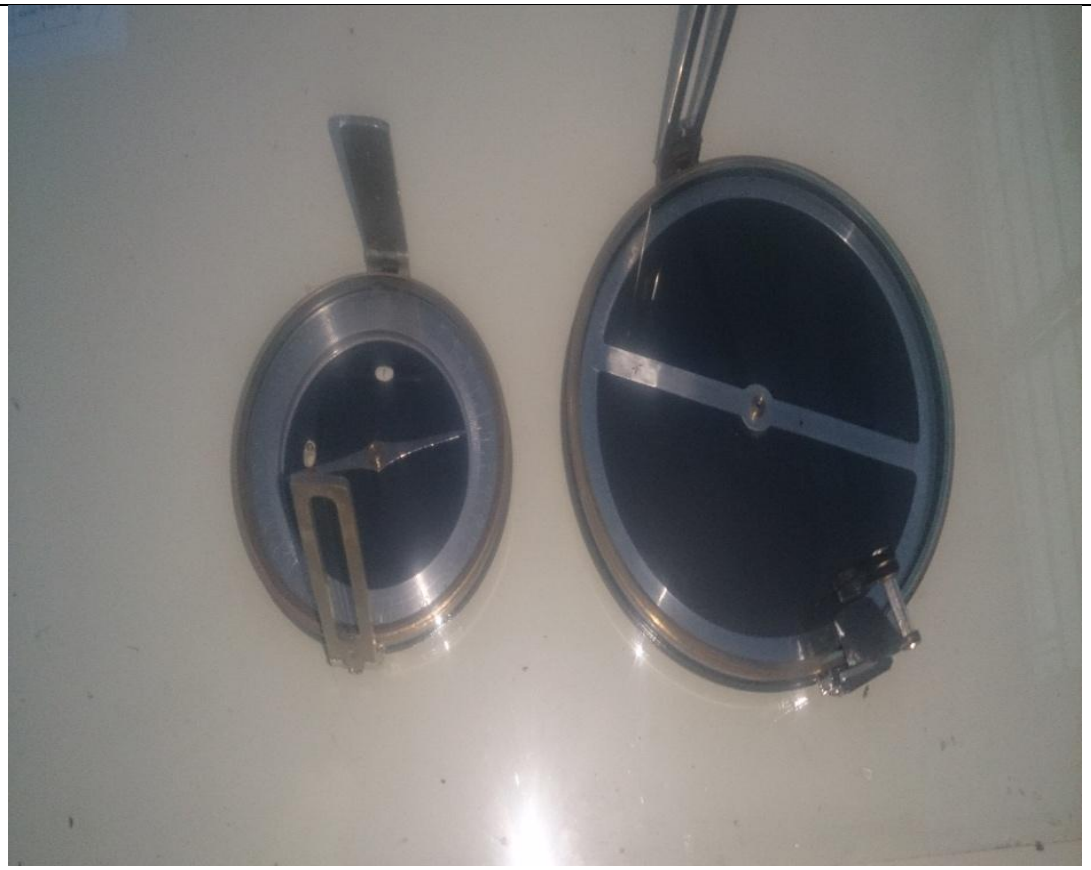
INTEGRAL UNIVERSITY LUCKNOW

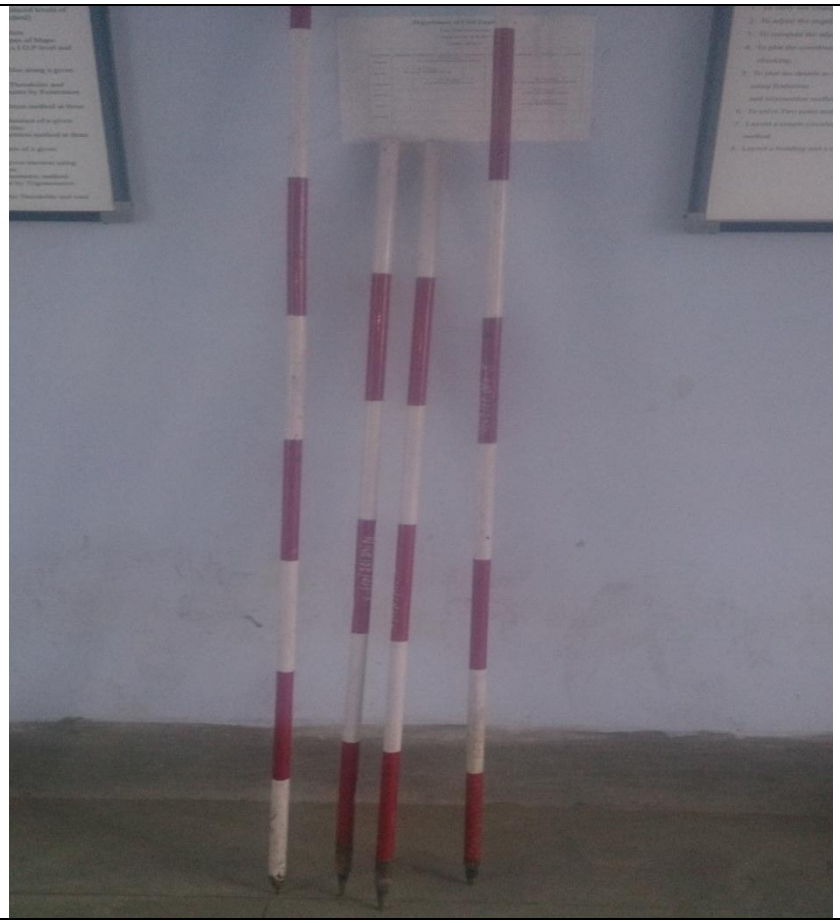
Basic Survey Field Work (ICE-352)

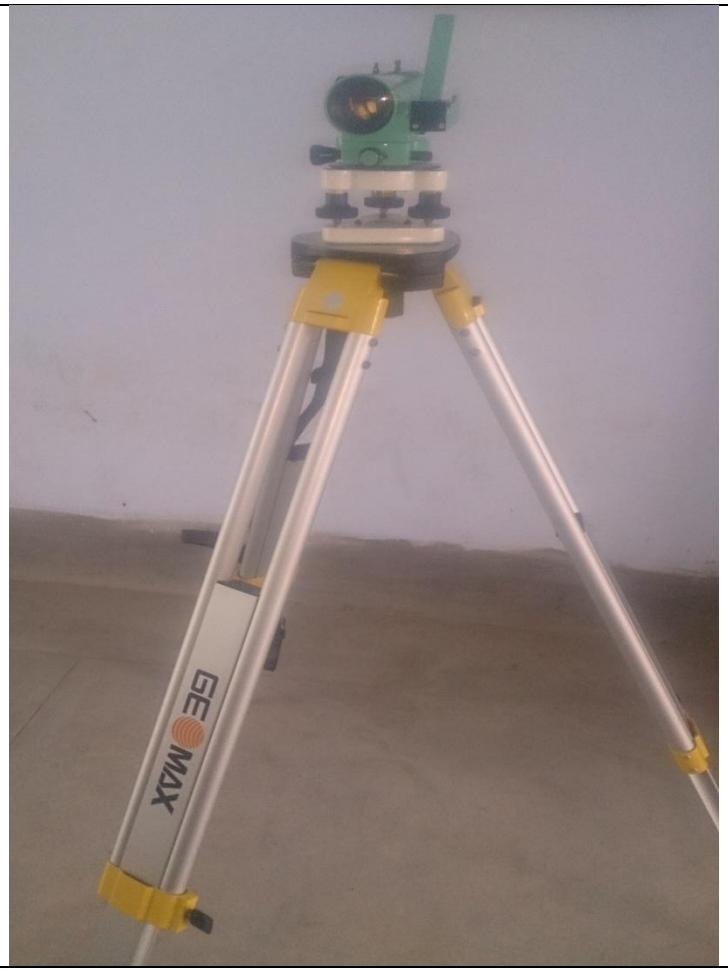
The history of surveying started with plane surveying when the first line was measured. Today the land surveying basics are the same but the instruments and technology has changed. The surveying equipments used today are much more different than the simple surveying instruments in the past. The land surveying methods too have changed and the surveyor uses more advanced tools and techniques in Land survey. Civil Engineering survey is based on measuring, recording and drawing to scale the physical features on the surface of the earth. The surveyor uses instruments for measuring, a field book for recording and now a days surveying softwares for plotting and drawing to scale the site features in civil engineering survey. The surveying Leveling techniques are aided by instruments such as theodolite, Level, tripods, tapes, chains, telescopes etc and then the surveying engineer drafts a report on the proceedings.

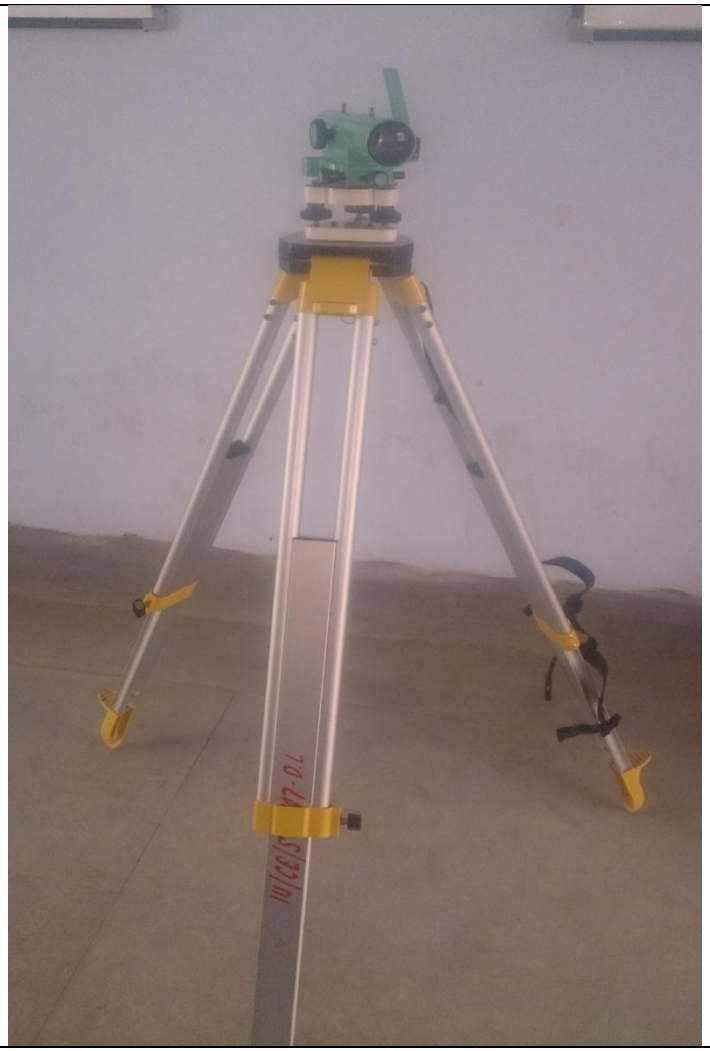
S.NO.	APPARATUS NAME	IMAGE	DISCRIPTION
1-	**PLANE TABLE**		In case of plane table survey, the measurements of survey lines of the traverse and their plotting to a suitable scale are done simultaneously. Instruments required: Alidade, Drawing board, peg, Plumbing fork, Spirit level and Trough compass .

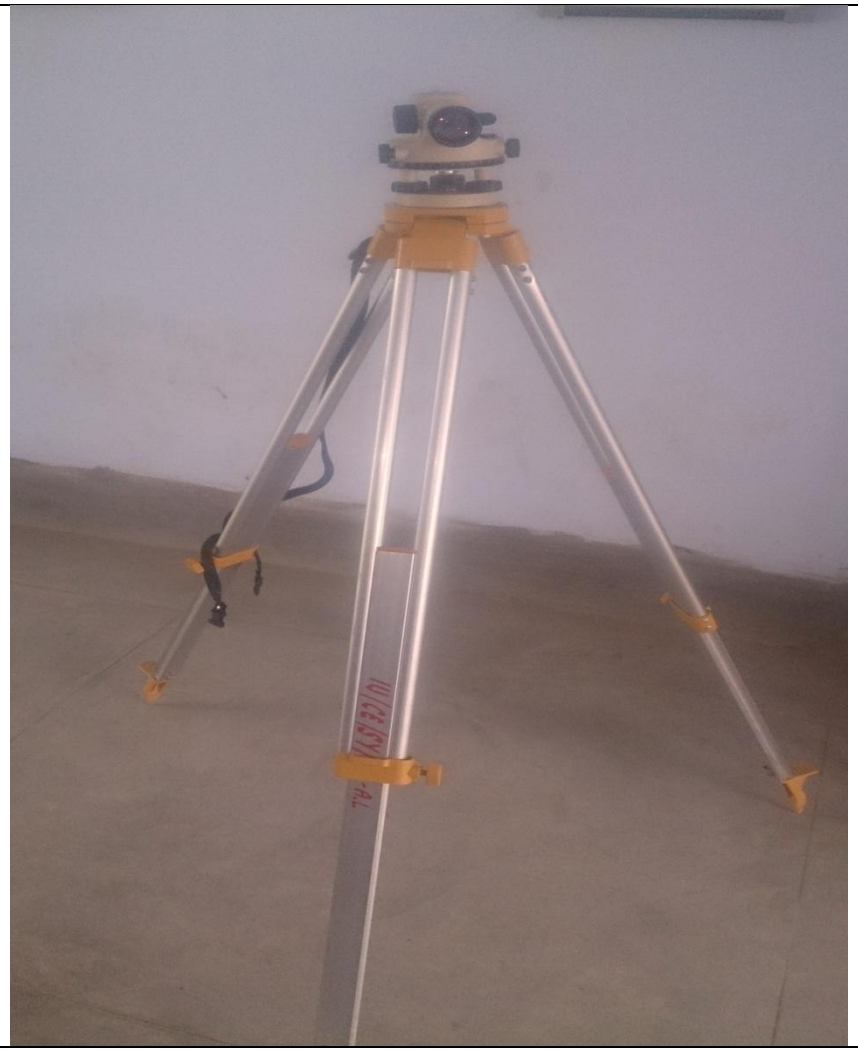
2-	**CHAIN AND TAPE**		The length of the survey lines are measured with the help of tape or chain.

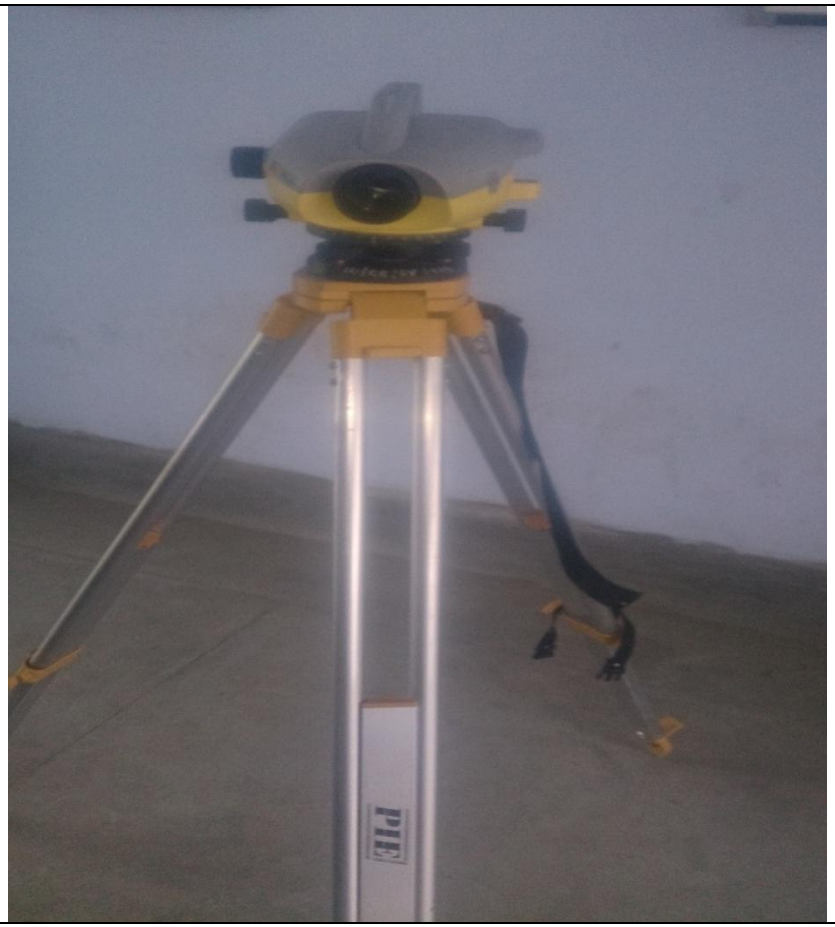
3-	**PRISMATIC &SURVEYOR CAMPASS**		Compass surveying is a type of surveying in which the directions of surveying lines are determined with a magnetic compass. The compass is generally used to run a traverse line. The compass calculates bearings of lines with respect to magnetic north. The included angles can then be calculated using suitable formulas in case of clockwise and anti-clockwise traverse respectively.

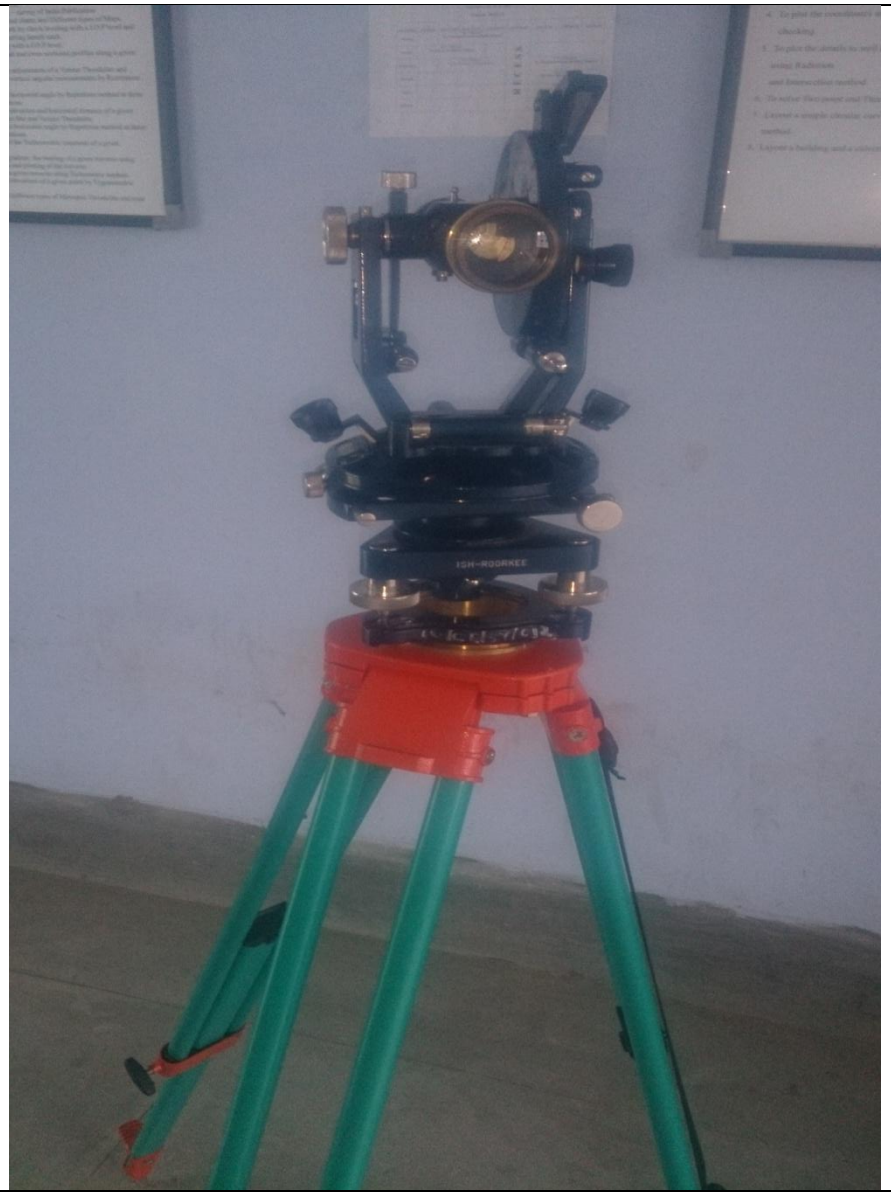
4-	**RANGING RODS**				**Ranging rod** is an surveying instrument used for marking the position of stations and for sightings of those stations as well as for ranging the straight lines. Now a days these are made of metallic materials only. These are usually 3 cm in diameter and 2 m or 3 m long.

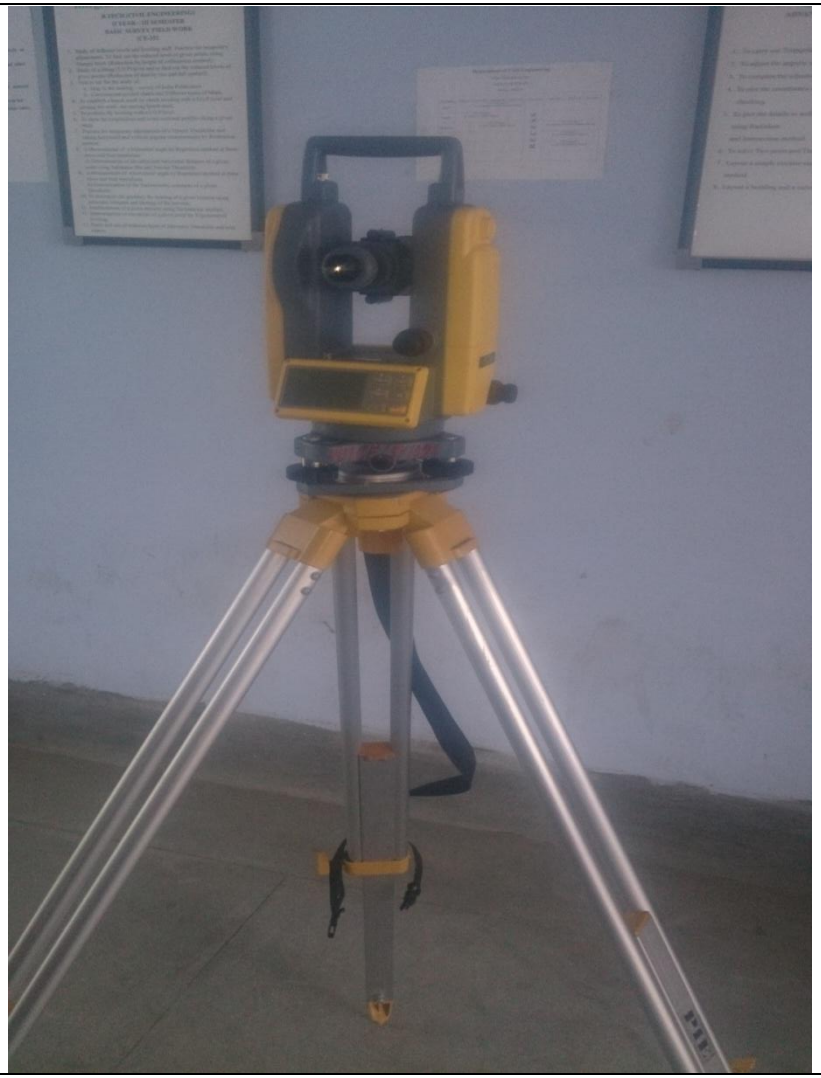
5-	**I.O.P. LEVEL**				An **I.O.P level** is an optical instrument used to establish or check points in the same horizontal plane. It is used in surveying and building with a vertical staff to measure height differences and so transfer, measure and set heights.

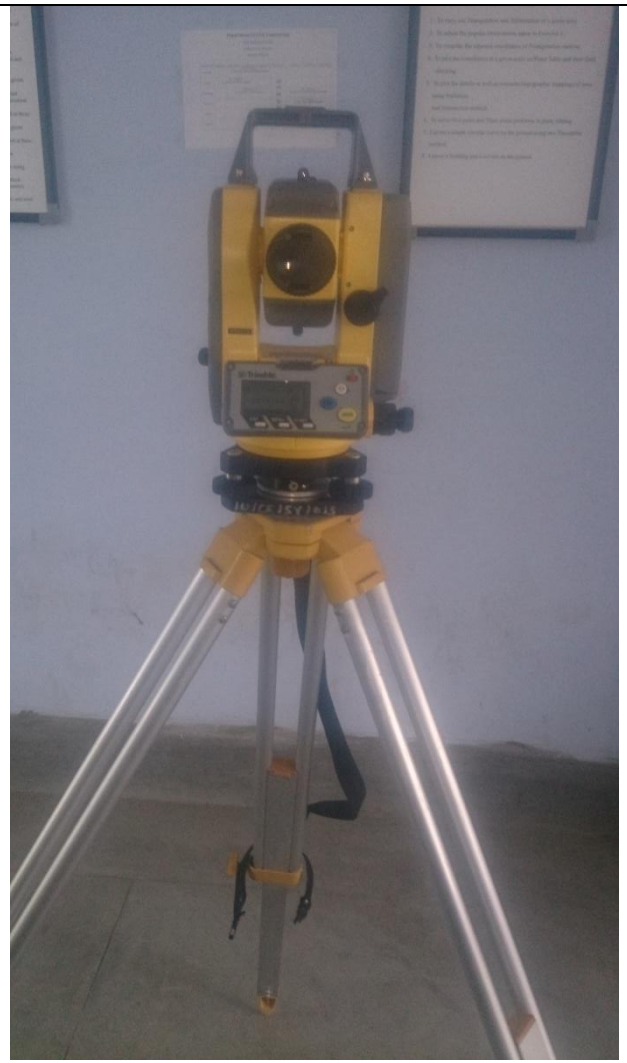
6-	**DUMPY LEVEL**				A **dumpy level** is an optical instrument used to establish or check points in the same horizontal plane. It is used in surveying and building with a vertical staff to measure height differences and so transfer, measure and set heights.

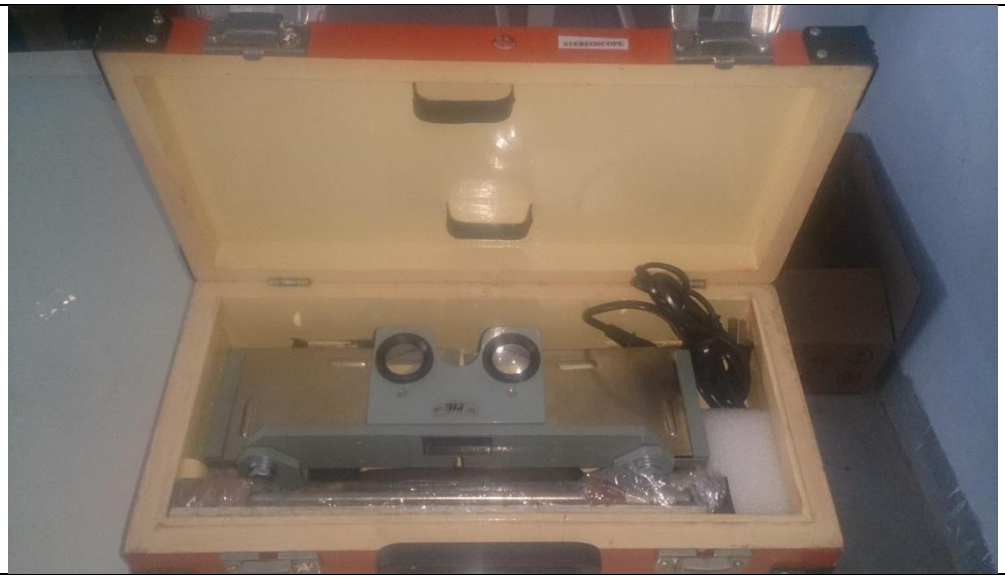
7-	**AUTO LEVEL**				A **auto level** is an optical instrument used to establish or check points in the same horizontal plane. It is used in surveying and building with a vertical staff to measure height differences and so transfer, measure and set heights.

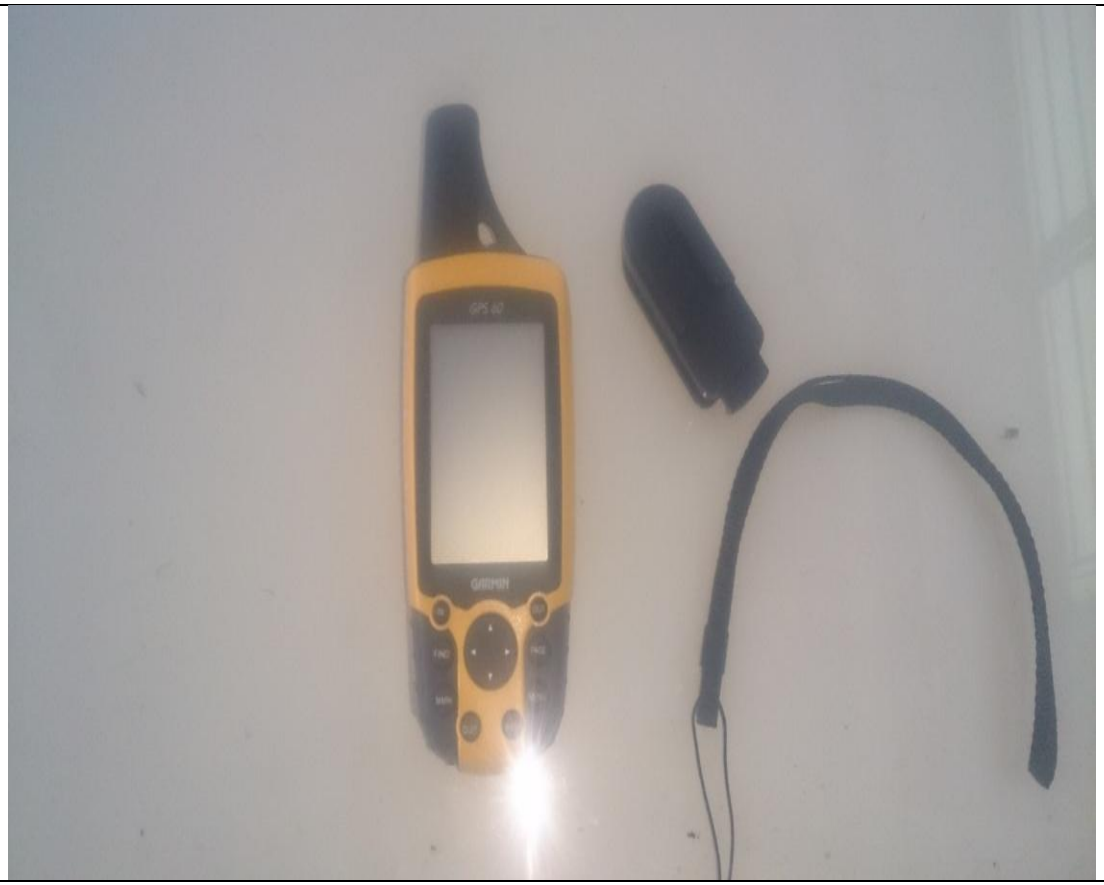
8-	**DIGITAL AUTO LEVEL**				Digital levels improve standards for levelling on construction sites and general surveying tasks. They are simple to use, take measurements quickly, and minimise human error, while the integrated programs enhance levelling work.

9-	**VERNIER THEODOLITE**			The Vernier Theodolite is also known as a transit. In a transit theodolite . A **theodolite** is a precision instrument for measuring angles in the horizontal and vertical plan es.

10-	**DIGITAL THEODOLITE**			Digital Theodolites serve as a vital surveying instrument and are widely used in surveying for the measurement of horizontal and vertical angles. Theodolites also determine the relative location, and are extremely useful in navigation and meteorology.

11-	**TOTAL STATION**			Total station is a combination of **Electromagnetic Distance Measuring Instrument** and electronic theodolite. It is also integrated with microprocessor, electronic data collector and storage system. The instrument can be used to measure horizontal and vertical angles as well as sloping distance of object to the instrument. Microprocessor unit processes the data collected to compute:

12-	**STEREOSCOPE**		**Stereoscope** is a device for viewing a stereoscopic pair of separate images, depicting left-eye and right-eye views of the same scene, as a single three-dimensional image.

13-	**GPS**			GPS was rapidly adapted for surveying, as it can give a position (Latitude, Longitude and Height) directly, without the need to measure angles and distances between intermediate points. Survey control could now be established almost anywhere and it was only necessary to have a clear view of the sky so the signal from the GPS satellites could be received clearly.