MOTHER TERESA
INSTITUTE OF SCIENCE AND TECHNOLOGY
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SANKETIKA NAGAR, KOTHURU (V), SATHUPALLY – 507303, KHAMMAM Dist., TELANGANA
Phone : 9494641251, Email ID : info@mistech.ac.in

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B - GRADE

DEPARTMENT OF CIVIL ENGINEERING

ACADEMIC YEAR: 2018-19

A SUMMARY REPORT

Course Name: SURVEYING AND GEOMATICS

Name of the Resource Person: Mr. D.PRASAD, NAC Academy, Hyderabad.

Gap Identified: Total station & Digital planimeter working methods

No. of Students attended: 50 members

Summary: On the day of the session (i.e 12-11-2018) Mr. D.PRASAD, NAC Academy, Hyderabad. Delivered a lecture on the basics of Introduction to the course of Total station & Digital planimeter working methods

Total station: in the course is delivered to Total stations are the primary survey instrument used in mining surveying. A total station is used to record the absolute location of the tunnel walls, ceilings (backs), and floors as the drifts of an underground mine are driven**.** A total station (TS) or total station theodolite (TST) is an electronic/optical instrument used for surveying and building construction. It is an electronic transit theodolite integrated with electronic distance measurement (EDM) to measure both vertical and horizontal angles and the slope distance from the instrument to a particular point, and an on-board computer to collect data and perform triangulation calculations. Robotic or motorized total stations allow the operator to control the instrument from a distance via remote control. This eliminates the need for an assistant staff member as the operator holds the retro reflector and controls the total station from the observed point. These motorized total stations can also be used in automated setups known as Automated Motorized Total Station (AMTS). Total stations are the primary survey instrument used in mining surveying.

Functions of the instruments: Angle measurement, Distance measurement, Coordinate measurement, Data processing, Applications, Mining, Mechanical and electrical construction, Meteorology.

Digital planimeter: An instrument used to measure the areas of maps or planes and flat surfaces in general. It is called a mechanical integrator and has a tracing point that performs double measurement of the perimeter of the relevant surfaces. The reading is numeric, appearing in digital format on a small monitor. The planimeter is used for finding out areas of

irregular figures on sheet there is a number of formulae available for calculating areas of regular figures, but the actual problem arises when the figure is irregular. Planimeter of conventional type like Amsler polar planimeter, rolling planimeter etc, require a lot of time for the setting of the farcing arm scale etc. to overcome this, on electronic digital planimeter is used nowadays to obtained the areas of irregular figures directly, accurately as well as quickly, which saves a lot of time and labor. Digital planimeter works on the built-in nickel-cadmium storage battery.

There is a rotary encoder, which has replaced the integrating wheel by mechanical planimeter. An electronic circuit measures the pulses of rotary encoder and area is displayed in digital form.

In the afternoon session, he explained the practical exposure of Total Station Working demo Total stations are used in surveying and mapping. A total station is a series of coordinated gun sights, telescopes, convergence sights, inclinometers, periodic dials, and a compass that allows the rapid collection and transfer of bearing measurements by connecting to the data link port of a GPS receiver. And The working of the linear planimeter may be explained by measuring the area of a rectangle ABCD (see image). Moving with the pointer from A to B the arm EM moves through the yellow parallelogram, with area equal to PQ×EM. This area is also equal to the area of the parallelogram A"ABB". The measuring wheel measures the distance PQ (perpendicular to EM). Moving from C to D the arm EM moves through the green parallelogram, with area equal to the area of the rectangle D"DCC". The measuring wheel now moves in the opposite direction, subtracting this reading from the former. The movements along BC and DA are the same but opposite, so they cancel each other with no net effect on the reading of the wheel. The net result is the measuring of the difference of the yellow and green areas, which is the area of ABCD.