

DEPARTMENT OF CIVIL ENGINEERING

III SEMESTER –

Environmental Engineering Lab

1. Determination of pH.
2. Determination of Alkalinity.
3. Determination of Acidity.
4. Determination of Chloride.
5. Determination of Solids.
6. Determination of Turbidity.
7. Determination of Dissolved oxygen.
8. Determination of Hardness.
9. Determination of Available Chlorine in bleaching powder.
10. Determination of Residual Chlorine in water sample.
11. To determine optimum dose of coagulant by Jar test.
12. Determination of conductivity.
13. Determination of BOD of a wastewater Sample.
14. Determination of COD of a wastewater Sample.

Strength of Materials Lab

1. To study various types of strain gauge apparatus.
2. Study of universal testing machine.
3. To determine tensile strength of steel specimen.
4. Compression test.
5. To perform Izod impact test.
6. To perform Charpy impact test.
7. To perform Brinell's hardness test on various metals.
8. To perform compression test on Bricks and Stones.
9. To determine the spring constant of Closely Coiled Spring.
10. To perform shear test on mild steel bar.

11. To perform bending test on wooden beam and find its flexural strength.
12. To perform torsion test on mild steel specimen.

Concrete Technology Lab

1. To determine standard consistency of cement.
2. To determine the initial and final setting time of a given cement sample by Vicat apparatus.
3. To determine soundness of a given cement samples by Le-Chatelier's method.
4. To determine fineness modulus and grain size distribution of given coarse and fine aggregate.
5. To determine the Crushing value, impact value and Abrasion value of aggregate.
6. To determine particle shape, texture and elongation/ flakiness of aggregate.
7. To determine Bulk density, Specific Gravity & Water Absorption of fine aggregate.
8. To find out the bulking factor and percentage silt in sand.
9. To determine workability of concrete by the slump test apparatus.
10. To determine workability of concrete by compaction factor apparatus.
11. To determine cube strength of concrete.
12. To design a concrete mix according to the road note no.4 method/ I.S. method and ACI method.
13. To perform non-destructive test by Rebound hammer test.
14. To determine compressive and tensile strength of cement.

Engineering Geology Lab

1. Megascopic study of common rock forming Minerals.
2. Megascopic study of common Rocks.
3. Geological Maps: Drawing of geological cross sections with civil engineering projects.
4. Field visit to civil engineering construction sites with reference to geological studies.

IV SEMESTER –

Structural Analysis Lab

Subject -Structural Analysis I

1. To find out slope and deflection of continuous beam.
2. To find the value of flexural rigidity for a given beam and compare with theoretical value.
3. To determine the moment required to produce a give rotation at one end of beam when the other end is i) Pinned ii)Fixed.
4. To study the behavior of different types of struts and to calculate Euler's buckling load for each case.
5. To verify the Maxwell's reciprocal theorem for beam.
6. To measure the strain in cantilever beam with the help of acoustic strain gauge.
7. Study of various types of strain gauges.
8. Plotting of influence lines by making use of muller-Breslau principle.
9. Determination of deflection of trusses by Willot-Mohr's diagram.
10. Determination of material fringe value.
11. Determination of stress in beam by photoelastic method.
12. To find horizontal thrust and to draw influence line for horizontal thrust for two hinge arch.
13. To calculate horizontal deflection at roller end in two hinged arch.

1. To measure the strain in the cantilever beam with the help of electrical resistance strain gauge.
2. To determine horizontal thrust for indeterminate portal frame.
3. Study of Polariscope.

Geotechnical Engineering Lab

Subject - Geotechnical Engineering I

1. Determination of water content by oven drying method.
2. Determination of specific gravity by pycnometer.
3. Determination of water content by pycnometer.
4. Determination of field density by core-cutter method.
5. Determination of field density by sand replacement method.
6. Determination of grain size distribution by sieving (Sieve Analysis).
7. Hydrometer analysis.
8. Determination of liquid limit of soil by Casagrande apparatus.
9. Determination of plastic limit of soil.
10. Determination of shrinkage limit of soil.
11. Determination of permeability by constant head and.
12. Determination of optimum moisture content by proctor test.
13. Study of direct shear test.
14. Study of unconfined compression test.
15. Study of triaxial shear test.

Transportation Engineering Lab

Subject -Transportation Engineering I

1. To determine the CBR value of the soil subgrade (California bearing ratio test).
2. Soil sub grade:AASHO classification.
3. Determination of crushing value of stone aggregate.

4. Determination of abrasion value of aggregate. (Los-Angeles test)
5. Determination of impact value of aggregate.
6. Determination of sp. Gravity and water absorption of aggregate.
7. Determination of elongation index and flakiness index of the aggregate and soundness test.
8. To determine the penetration value of the bitumen sample.
9. To determine the softening point of the bitumen sample.
10. To determine the ductility value of the bitumen sample.
11. To determine Specific gravity of bitumen.
12. To conduct Adhesion test on bitumen.
13. To determine the flash and fire point of the bitumen sample.

Surveying Lab

Subject – Surveying I

1. Demonstration of metric chain .
2. Measurement of distance by ranging and tape.
3. Locating various objects by tape & cross staff survey.
4. Determination of area of given polygon by tape & cross staff survey .
5. Measurement of bearing of sides of travers with prismatic compass and computation of correct included angles
6. Location given building by tape and compass traversing (one full size drawing sheet.)
7. Determination of elevation of various point with dumpy level by collimation plane method and rise fall method.
8. Fixing bench mark with respect to temporary bench mark with auto level by fly levelling and check leveling .
9. L – section and cross section of road. (one full size drawing sheet each for L-section and cross section).
10. Measurement of horizontal angles using Theodolite by method repetition.
11. Measurement of vertical angles with Theodolite.

12. Determination of horizontal distance between two inaccessible points with Theodolite.
13. Locating given building by Theodolite traversing (One full size drawing sheet).
14. Locating given building by plane table traversing (one full size drawing sheet).
15. Determination of elevation of point by trigonometric leveling .
16. To draw Contour map of given area (one full size drawing sheet).
17. Determination of area of an irregular figure by using Planimeter.
18. Study of Optical Theodolite, EDM, GPS.
19. To give site Layout for given plan of building.

V SEMESTER –

Surveying Lab

Subject - Surveying II

A. Practicals

1. Determination of constant of Tacheometer.
2. Determination of elevation of points by Tacheometric surveying
3. Determination of elevation of points and horizontal distance between them by Tacheometric survey.
4. Determination of gradient of given length of road by Tacheometric survey.
5. Setting out simple circular curve by offsets from chord produced method.
6. Setting out simple circular curve by Rankine method of tangential angle method.
7. Setting out of simple transition curve by tangential angle method.
8. Study of Stadiometer

B. Survey camp (Any one, minimum three days)

1. Road project.
2. Irrigation project.
3. Water supply project.

Transportation Engineering Lab

Subject - Transportation Engineering I

1. Determination of crushing value of stone aggregate.
2. Determination of abrasion value of aggregate. (Los-Angeles test)
3. Determination of impact value of aggregate.
4. Determination of Specific Gravity and water absorption of aggregate.
5. Determination of elongation index and flakiness index of the aggregate.
6. To determine the penetration value of the bitumen sample.
7. To determine the softening point of the bitumen sample.
8. To determine the ductility value of the bitumen sample.
9. To determine the flash and fire point of the bitumen sample.
10. To determine the CBR value of the soil subgrade (California bearing ratio test)

VI SEMESTER –

Structural Analysis Lab

Subject -Structural Analysis II

1. To find out slope and deflection of continuous beam.
2. To find the value of flexural rigidity for a given beam and compare with theoretical value.
3. To determine the moment required to produce a give rotation at one end of beam when the other end is i) Pinned ii)Fixed.
4. To study the behavior of different types of struts and to calculate Euler's buckling load for each case.
5. To verify the Maxwell's reciprocal theorem for beam.
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8. Plotting of influence lines by making use of muller-Breslau principle.
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12. To find horizontal thrust and to draw influence line for horizontal thrust for two hinge arch.
13. To calculate horizontal deflection at roller end in two hinged arch.
14. To measure the strain in the cantilever beam with the help of electrical resistance strain gauge.
15. To determine horizontal thrust for indeterminate portal frame.
16. Study of Polariscope.

Fluid mechanics Lab

Subject - Fluid Mechanics II

1. Study of flow around immersed bodies.
2. Determination of Darcy-Weisbach friction factor for given pipes.
3. Determination of Manning's or Chezy's constant for an open channel.
4. Developing specific energy diagram for a rectangular channel.
5. Study of GVF profiles.
6. Study of hydraulic jump in a horizontal rectangular channel.
7. Study and performance of Francis turbine.
8. Study and performance of Pelto Wheel turbine.
9. Study and performance of Centrifugal pump.
10. Study and performance of Reciprocating pump.
11. Determination of discharge coefficient of Broad crested weir.
12. Determination of discharge coefficient of Spillways
13. Model study of different types of valves and pumps..
14. Determination of discharge coefficient of the plug sluices at different initial heads.
15. Design problem on pipe network analysis.

Computer Lab

Subject – Computer Application in Civil Engineering

Minimum sixteen computer program development from various Civil Engineering fields using FORTRAN 95/ C language

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