

GROUND WATER HYDROLOGY

Module I

Well Hydraulics: Aquifers and Aquifer Parameters, Darcy's law, Hydraulic Conductivity and its Characteristics, Dupuit Equation, Groundwater Flow Direction Steady Groundwater Flow, Groundwater Flow Equation, Estimation of Aquifer Parameters from Pumping Test Data, Graphical Techniques and their Limitations, Groundwater Well Losses, Interference among Wells, Potential Flow, Image well theory and its Application in Groundwater Flow.

Module II

Water Well Design and Well Drilling: Well Screen, Development and Completion of Well, Rotary Drilling and Rotary Percussion Drilling, maintenance of Wells.

Module III

Hydrogeology: Porosity and Permeability of Rocks, Groundwater in Igneous, Metamorphic, Sedimentary Rocks and Non Industrated Sediments, Hydrogeological Regions of India. Surface and Subsurface Geophysical methods for Groundwater Explorations.

Module IV

Groundwater Management: Conjunctive Use, Alternative Basin Yields, Artificial Recharge of Groundwater, Groundwater Quality. Groundwater Modelling: Groundwater Flow, mathematical, Analog and Digital modelling, Regional Groundwater Modelling.

References:

1. Walton, W.C. "Groundwater Resources Evaluation", McGraw Hill Inc, n York
2. Todd, D.K. "Groundwater Hydrology", John Wiley & Sons, Singapore
3. Johnson, E.E."Groundwater", E. Johnson Inc. Washington.
4. Raghunath, H.M. "Groundwater", Wiley Eastern Ltd, N Delhi
5. Sharma, H.D. and Chawla, A.S. "Manual on Groundwater and Tube Wells", Technical Report No.18, CBIP, New Delhi,
6. Davis, S.N. and De Weist, R.J.M. "Hydrogeology", John Wiley & Sons, N York.
7. Domenico "Concepts and models in Groundwater Hydrology", McGraw Hill Inc. N York
8. Garg, S.P. "Groundwater and Tube Wells", Oxford and IBH Publishing C. N Delhi.