PEN6J001 WATER RESOURCE PLANNING AND MANAGEMENT

Module I
Water Resources: Introduction, hydrological cycle, World water distribution, need forconservation & development of water resources, Hydrological analysis of precipitation:Precipitation, measurement of rainfall, index of wetness, design of rain gauge network, probable maximum precipitation curve, Infiltration, Infiltration Capacity Curve, Measurement & estimation of water losses, Runoff cycle, Runoff coefficients, Computation of runoff: unit hydrograph, Bernard`s distribution, Unit Storm Method, Evapo-transpiration.

Module II
Streams & reservoir: Stream flow measurement: Notches, weirs, control meters, Venture-Flumes, Velocity area method, slope area method, capacity elevation curve of river, Types of reservoirs, storage zones, catchment yield & reservoir yield, reservoir capacity, mass curve of inflow and outflow, reservoir sedimentations and losses, selection of site for a reservoir, economic height of dam, hydrological reservoir routing-Trial & Error Method, Modified Pul'smethod and Goodrich Method.

Module III
Groundwater hydrology: Measurement of yield, Laws of groundwater movement: Darcy`s law,Thiems equilibrium formula, Duipuits formula etc.Recharging of underground storage, infiltration galleries, infiltration wells, springs, wells.

Module IV
Flood flows and management: Definition & causes of flood, estimation of design flood and floodflows for design of hydraulic structures, Flood control measures, Flood Routing
Water resources planning & management: Impact of climate change on water resources.

Books and References
1. Water Resources Engineering- Larry W. Mays, John Wiley and Sons
2. Water Resources Engineering - Ray K Linsley, Joseph B Franzini, David L Freyberg, George Tchobanoglous,
1. Mc Graw Hill, 4th Ed.
2. Hydrology and Water Resources Engineering- S.K. Garg, Khanna Publishers
3. Hydrology- M.M. Das, M.D. Saikia, PHI Learning Pvt Ltd., New Delhi, 3rd Ed.