

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Civil Engineering, VIII-Semester

Departmental Elective CE 802(A) Engineering Hydrology

UNIT I

Hydrological cycle, water budget, Practical applications of Hydrology, Hydrometeorology, airmasses. Formation of precipitation, types of precipitation, meteorological observations, probability & random variables, regression analysis, catchment its type and importance, measurement of precipitation, Raingauges, location of raingauges, interpretations & analysis of rainfall data, calculation of average rainfall, Hyetograph, Intensity-duration, Frequency curves , Mass curve.

UNIT II

Stream flow measurement and various methods, stage-discharge relations. Rating curve and its extension, stream gauge Networking, stage & discharge hydrographs, evaporation & evapotranspiration-calculation, factors affecting measurement, Reducing evaporation.

UNIT III

Infiltration, Factors affecting it, measurement of Infiltration, Infiltration equation and Indices. Occurrence of ground water, Darcey's law, flow in wells (steady & unsteady). Ground water exploration. Yield of well, determination of yield.

UNIT IV

Runoff and its components, factors affecting runoff, Basin yield, Rainfall-Runoff relationships, flow-duration curve, flow mass curve, Hydrograph, separation of hydrograph, unit hydrograph - theory & application, derivation of unit hydrograph convolution equation, unit hydrograph from complex storms unit hydrograph for various durations, synthetic unit hydrograph, S-curve hydrograph, distribution graph, use & applications of unit hydrograph, Dimensionless unit Hydrograph.

UNIT V

Instantaneous unit Hydrograph, Derivation of IUH, flood routing, reservoir routing, different methods, storage discharge relationship, ISD method, puls method, channel routing –muskingham method, design flood –Empirical & rational formula, frequency analysis, Gumbel's distribution, Reservoir sedimentation-causes, factors affecting & control.

Books:

1. Engineering Hydrology by Subramanyam
2. Introduction to hydrology By: Viessman & Lewis
3. Applied Hydrology By: CW Fetter
4. A text Book of Hydrology By: Reddy
- 5.