RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

Credit Based Grading System

Civil Engineering, VI-Semester

Elective – II CE- 6005 (1) Advanced Water Resources Engineering

Unit - 1

Optimal Raingauge Network Design, Adjustment of Precipitation Data, Depth Area-Duration Analysis, Design Storm, Probable Maximum Precipitation, Probable Maximum Flood, Flood Frequency Analysis, Risk Analysis,

Unit - 2

Flood Management, Flood Routing through Reservoirs, Channels Routing Muskingum Method, Introduction to Stochastic Models in Hydrology like AR, ARMA, ARIMA etc. Concept of Correlogram.

Unit - 3

System Analysis: Need, Water Resources Systems, Optimisation Techniques, Linear Programming, Feasible Solutions, Graphical Method, Simplex Method, Use of of LP in Water Resources, Introduction to Reservoir Operation, Rule curves, Linear Decision Rule

Unit - 4

Dynamic Programming, its utility in Resource Allocation and other Decision Making Problems, Optimal Operating, Policies, Use of D. P. in Reservoir, Operation.

Unit-5

Network Methods, Project Optimality Analysis. Updating of Network, Utility in Decision Making.

Book Recommended:

Test Books

1.   Subramany K., *Engg. Hydrology.*

2.   Philiphs & Ravindran: *Operations Research*

3.   Hire D.S. & Gupta: Operation Research

Reference Books

1.   Loucks D.P., Stedinder l.R. & Haith D.A : *Water Resources Systems Engg.*

2.   Kottegoda N. T., Stochastic Water Resources Technology.

3.   *Singh V.P. : Elementary Hydrology*