Unit – I

Introduction: Definition, concepts of watershed; Effects of watershed on community: a) topography b) channel networks c) geology and soils d) vegetation and landuse; Soils: Types of rocks, weathering of rocks, factors of soil formation, soil forming processes, soil profile, physical properties, types of the soils in India; Soil erosion: Basic processes, factors affecting soil erosion, types of soil erosion; Watershed development: Land capability classification, concept, objectives and need for watershed development.

Unit – II

Hydrologic processes: Hydrologic cycle, precipitation (liquid/solid), interception, evaporation and transpiration, infiltration and run-off; Participatory rural appraisal (PRA) in watershed programme: Basic principles, assumptions, basis, important types, benefits, tools, maps and models of PRA programmes; Erosion control measures on agricultural land: Contour cultivation, contour bunding, graded bunds, bench terracing, grassed water ways; Mechanical erosion control measures for non agricultural land: Contour trenching, gully control measures, vegetative control measures, checkdams, brush dams, semi permanent gully, control structures, permanent control structures.

Unit - III.

Water conservation and Harvesting: Rainwater harvesting, catchment harvesting, harvesting structures, soil moisture conservation, check dams, artificial recharge, farm ponds, percolation tanks; Groundwater management in watershed: Types of aquifers, vertical distribution of groundwater, conjunctive use of surface and use of groundwater; Remote sensing, thematic maps, geological and hydrogeological maps.

Unit – IV

Ecosystem Management: Role of ecosystem, crop husbandry, soil enrichment, inter-, mixed- and strip-cropping, cropping pattern, sustainable agriculture, bio-mass management, dryland agriculture, Silvi pasture, horticulture, social forestry and afforestation; Grassland management, Joint forestry management Monitoring and evolution of watershed; Planning of watershed management activities: Preparation of action plan, administrative requirements.

Books Recommended

Watershed Management
5. Irrigation and Water Management by D.K.Majumdar, Printice Hall of India.