

# AMEV17 HYDROLOGY AND WATER RESOURCES ENGINEERING

## UNIT-1 PRECIPITATION AND ABSTRACTIONS

- 1.1 Hydrological cycle- Meteorological measurements
- 1.2 Requirements, types and forms of precipitation
- 1.3 Rain gauges-Spatial analysis of rainfall data using Thiessen and Isohyetal methods- Interception
- 1.4 Evaporation. Horton's equation, pan evaporation measurements and evaporation suppression
- 1.5 Infiltration-Horton's equation - double ring infiltrometer, infiltration indices.

## UNIT-2 RUNOFF

- 2.1 Watershed, catchment and basin
- 2.2 Catchment characteristics - factors affecting runoff - Run off estimation using empirical
- 2.3 Strange's table and SCS methods
- 2.4 Stage discharge relationships- flow measurements- Hydrograph
- 2.5 Unit Hydrograph – IUH

## UNIT-3 FLOOD AND DROUGHT

- 3.1 Natural Disasters-Flood Estimation- Frequency analysis
- 3.2 Flood control- Definitions of droughts
- 3.3 Meteorological, hydrological and agricultural droughts
- 3.4 IMD method NDVI analysis- Drought Prone Area Programmed (DPAP)

## UNIT-4 RESERVOIRS

- 4.1 Classification of reservoirs, General principles of design, site selection, spillways, elevation
- 4.2 Area- capacity- storage estimation, sedimentation - life of reservoirs – rule curve

## UNIT-5 GROUNDWATER AND MANAGEMENT

- 5.1 Origin- Classification and types - properties of aquifers- governing equations
- 5.2 Steady and unsteady flow - artificial recharge - RWH in rural and urban areas

### Reference Books:

1. David Keith Todd. "Groundwater Hydrology", John Wiley & Sons, Inc. 2007
2. Ven Te Chow, Maidment, D.R. and Mays, L.W. "Applied Hydrology", McGraw Hill International Book Company, 1--8.
3. Raghunath .H.M., "Hydrology", Wiley Eastern Ltd., 1--8.