

# AMS14 HYDROPOWER ENGINEERING

## UNIT-1 WATER POWER DEVELOPMENT

- 1.1 Definition, the hydrologic cycle, hydrograph, flow duration curve, mass curve,
- 1.2 Hydropower plant, hydro plant controls, combined hydro and steam power plants.

## UNIT-2 HYDRAULIC MACHINES

- 2.1 Introduction, turbines, general layout of a hydro-electric power plant, definitions of heads and efficiencies of turbines,
- 2.2 Classification of hydraulic turbines, Pelton wheel (or turbine), radial flow reaction turbines,
- 2.3 velocity triangles and work done by water on runner, outward radial flow reaction turbine,
- 2.4 Francis turbine, design of Francis turbine runner, design of Francis turbine runner,
- 2.5 deriaz turbine, and scale effect Performance characteristics of hydraulic turbines, constant efficiency or iso-efficiency or muschel curves,
- 2.6 Governing of reaction turbines, cavitation's, selection of hydraulic turbines, surge tanks.

## UNIT-3 CENTRIFUGAL PUMPS

- 3.1 Introduction, classification of pumps, water hammer in pipes

### Reference Books:

1. Hydro Power Engineering: A Textbook for Civil Engineers by James Joseph Doland
2. Hydropower engineering By Warnick, C C

