AMC- 14 : HYDROPOWER ENGINEERING

1. WATER POWER DEVELOPMENT

Definition, the hydrologic cycle, hydrograph, flow duration curve, mass curve, hydropower plant, hydroplant controls, combined hydro and steam power plants.

2. HYDRAULIC MACHINES

Introduction, turbines, general layout of a hydro-electric powerplant, definitions of heads and efficiencies of turbines, classification of hydraulic turbines, pelton wheel (or turbine), radial flow reaction turbines, velocity triangles and work done by water on runner, outward radial flow reaction turbine, Francis turbine, design of Francis turbine runner, design of Francis turbine runner, deriaz turbine, scale effect

Performance characteristics of hydraulic turbines, constant efficiency or iso-efficiency or muschel curves, Governing of reaction turbines, cavitations, selection of hydraulic turbines, surge tanks.

3. CENTRIFUGAL PUMPS

Introduction, classification of pumps, water hammer in pipes.

4. HYDROPOWER PLANTS

Classification of hydropower plants - Run of river plants, Storage or Valley dam plants, Pumped storage plants, Introduction to micro hydro, Base load and Peak load plants, advantages & disadvantages, Components of hydropower plants.

5. TURBINES

Selection, Classification, Principles and design of impulse & reaction turbines, Governing of turbines, Water hammer, Surge tanks, Draft tubes, Cavitation.

WATER POWER ENGINEERING

1.M. M. Dandekar and K. N. Sharma
2.Handbook of Hydroelectric Engineering P.S. Nigam
3. Modern Power System Planning Wang
4. Hydropower Resources in India CBIP