

NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC:Principle of Hydraulic Machines and System Design

Subject Co-ordinator - Prof. Pranab K. Mondal

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

- Lecture 1 - Introduction to hydraulic machines: classifications and operational principles
- Lecture 2 - Euler equation for turbomachines: net head developed by the pump/turbines
- Lecture 3 - Velocity triangles of pumps, effect of inlet swirl on pump operation
- Lecture 4 - Velocity triangles of pumps, effect of inlet swirl on pump operation
- Lecture 5 - Pump casings, Efficiencies and Problems - I
- Lecture 6 - Pump casings, Efficiencies and Problems - II
- Lecture 7 - Pump casings, Efficiencies and Problems - III
- Lecture 8 - Axial flow pump, HQ curve, System Resistance Curve - I
- Lecture 9 - Axial flow pump, HQ curve, System Resistance Curve - II
- Lecture 10 - HQ Curve, System Resistance Curve - I
- Lecture 11 - HQ Curve, System Resistance Curve - II
- Lecture 12 - Introduction to Cavitation
- Lecture 13 - Condition for Cavitation and NPSH
- Lecture 14 - Net Positive Suction Head (NPSH)
- Lecture 15 - Suction number and Introduction to off design condition
- Lecture 16 - Cavitation: The effect of off-design Conditions
- Lecture 17 - Cavitation: Preventive Measures
- Lecture 18 - Cavitation: Preventive Measures, Effect on Pump Characteristic
- Lecture 19 - Problems on Cavitation
- Lecture 20 - Introduction to Slip : Stodola Slip Model
- Lecture 21 - Departure from Euler theory
- Lecture 22 - Slip Velocity - I
- Lecture 23 - Slip Velocity - II
- Lecture 24 - Problem on slip
- Lecture 25 - Degree of reaction of pump
- Lecture 26 - Degree of reaction and axial pump design
- Lecture 27 - Testing of radial flow pump - I
- Lecture 28 - Testing of radial flow pump - II
- Lecture 29 - Problem on radial flow pump testing

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- Lecture 30 - Radial equilibrium of axial flow pump - I
- Lecture 31 - Radial equilibrium of axial flow pump - II
- Lecture 32 - Pump operation: series and parallel connection
- Lecture 33 - Series and parallel operation of dissimilar pumps
- Lecture 34 - Pumping system design
- Lecture 35 - Design of parallel pumping system
- Lecture 36 - Numerical problem on pumps - I
- Lecture 37 - Numerical problem on pumps - II
- Lecture 38 - Numerical problem on pumps - III
- Lecture 39 - Working principle and Indicator diagram of PD pump
- Lecture 40 - Working principle and Indicator diagram of PD pump (Continued...)
- Lecture 41 - Modified indicator diagram and Head-Discharge curve
- Lecture 42 - Analysis and Head-Discharge curve of PD pump
- Lecture 43 - Analysis and efficiencies of PD pump
- Lecture 44 - Requirement of air chamber in PD pump
- Lecture 45 - Numerical problem on PD pump with air chamber
- Lecture 46 - Similarity and dimensional analysis of hydraulic machines
- Lecture 47 - Dimensional analysis of hydraulic machines: Buckingham's theorem
- Lecture 48 - Buckingham's theorem: Specific speed of hydraulic machines
- Lecture 49 - Turbine Classification and Operational principle of Pelton wheel
- Lecture 50 - Velocity Triangles and analysis
- Lecture 51 - Operational Principle of Reaction turbine
- Lecture 52 - Degree of Reaction and Introduction to axial flow turbine
- Lecture 53 - Kaplan Turbine: Operational Principle, Turbine efficiencies
- Lecture 54 - Draft Tube for Reaction Turbine and Cavitation
- Lecture 55 - Energy Balance and NPSH
- Lecture 56 - Thoma Cavitation Factor
- Lecture 57 - Reaction Turbine: Design aspects and Characteristic Curves
- Lecture 58 - Problems on Impulse and Reaction Turbines