



DEMAND

PAVIATH INTEGRATED SOLUTION

CIVIL ENGG

CIVIL POLY

HYDRAULICS

Paviath ONLINE

◆ CIVIL POLY ◆ III YEAR V SEM ◆ CODE CEM52

- DEFINE THE PROPERTIES OF FLUIDS AND THEIR PHYSICAL QUANTITIES.
- LIST DIFFERENT TYPES OF PRESSURES AND VARIOUS PRESSURE MEASURING DEVICES.
- CALCULATE HYDROSTATIC FORCES ON PLANE SURFACE IMMERSED IN WATER.
- EXPLAIN TYPES OF FORCES, ENERGY AND APPLICATION OF BERNOULLI'S THEOREM.
- DESCRIBE DIFFERENT TYPES OF ORIFICES AND MOUTH PIPES AND TO DERIVE DISCHARGE FORMULAE AND THEIR PRACTICAL APPLICATION.
- STATE THE DIFFERENT LOSSES OF HEAD OF FLOWING LIQUIDS IN PIPES AND THEIR EQUATIONS.
- DESCRIBE DIFFERENT TYPES OF NOTCHES AND WEIRS, AND DERIVING THE DISCHARGE FORMULAS AND THEIR PRACTICAL APPLICATION.
- DESCRIBE DIFFERENT TYPES OF CHANNELS AND THEIR DISCHARGE FORMULAS AND DETERMINE THE CONDITION FOR MAXIMUM DISCHARGE.
- EXPLAIN THE CONSTRUCTION DETAILS, SPECIFICATIONS AND EFFICIENCIES OF RECIPROCATING PUMPS AND CENTRIFUGAL PUMPS.

1.1 INTRODUCTION

HYDRAULICS – DEFINITION – PROPERTIES OF FLUIDS – MASS, FORCE, WEIGHT, SPECIFIC VOLUME, SPECIFIC GRAVITY, SPECIFIC WEIGHT, DENSITY, RELATIVE DENSITY, COMPRESSIBILITY, VISCOSITY, COHESION, ADHESION, CAPILLARITY AND SURFACE TENSION – DIMENSIONS AND UNITS FOR AREA, VOLUME, SPECIFIC VOLUME, VELOCITY, ACCELERATION, DENSITY, DISCHARGE, FORCE, PRESSURE AND POWER.

2.1 FLOW OF FLUIDS

TYPES OF FLOW – LAMINAR AND TURBULENT FLOW – STEADY AND UNSTEADY FLOW – UNIFORM AND NON-UNIFORM FLOW – EQUATION FOR CONTINUITY OF FLOW (LAW OF CONSERVATION OF MASS) – ENERGY POSSESSED BY A FLUID BODY – POTENTIAL ENERGY AND POTENTIAL HEAD – PRESSURE ENERGY AND PRESSURE HEAD – KINETIC ENERGY AND KINETIC HEAD – TOTAL ENERGY AND TOTAL HEAD – BERNOULLI'S THEOREM – (NO PROOF) – PROBLEMS ON PRACTICAL APPLICATIONS OF BERNOULLI'S THEOREM – VENTURIMETER – ORIFICEMETER (DERIVATION NOT NECESSARY) – SIMPLE PROBLEMS.

3.1 FLOW THROUGH PIPES

DEFINITION OF PIPE – LOSSES OF HEAD IN PIPES – MAJOR LOSSES – MINOR LOSSES – SUDDEN ENLARGEMENT, SUDDEN CONTRACTION, OBSTRUCTION IN PIPES (NO PROOF) – SIMPLE PROBLEMS – ENERGY / HEAD LOSSES OF FLOWING FLUID DUE TO FRICTION – DARCY'S EQUATION – CHEZY'S EQUATION (NO DERIVATION) – PROBLEMS – TRANSMISSION OF POWER THROUGH PIPES – EFFICIENCY – PIPES IN PARALLEL CONNECTED TO RESERVOIR – DISCHARGE

3.2 FLOW THROUGH NOTCHES

DEFINITIONS – TYPES OF NOTCHES – RECTANGULAR, TRIANGULAR AND TRAPEZOIDAL NOTCHES – DERIVATION OF EQUATIONS FOR DISCHARGES – SIMPLE PROBLEMS – COMPARISON OF V-NOTCH AND RECTANGULAR NOTCH.

4.1 FLOW THROUGH WEIRS

DEFINITIONS – CLASSIFICATION OF WEIRS – DISCHARGE OVER A RECTANGULAR WEIR AND TRAPEZOIDAL WEIR – DERIVATION – SIMPLE PROBLEMS – END CONTRACTIONS OF A WEIR – FRANCI'S AND BAZIN'S FORMULA – SIMPLE PROBLEMS – CIPPOLETTI WEIR – PROBLEMS – NARROW CRESTED WEIR – SHARP CRESTED WEIR WITH FREE OVER FALL – BROAD CRESTED WEIR – DROWNED OR SUBMERGED WEIRS – SUPPRESSED WEIR – STEPPED WEIR – PROBLEMS – DEFINITION OF TERMS – CREST OF SILL, NAPPE OR VEIN, FREE DISCHARGE – VELOCITY OF APPROACH – SPILLWAYS AND SIPHON SPILL WAY – DEFINITION.

5.1 GROUND WATER

AQUIFER – WATER TABLE – EXPLORING THE AVAILABILITY OF GROUND WATER – TAPING OF GROUND WATER – OPEN WELL – BORE WELL – TYPES OF WELL CONSTRUCTION – YIELD OF A OPEN WELL – EQUATION – SPECIFIC CAPACITY OR SPECIFIC YIELD OF A WELL – TEST FOR YIELD OF WELL – METHODS OF RAIN WATER HARVESTING – SANITARY PROTECTIONS – NO PROBLEMS.

5.2 FLOW THROUGH OPEN CHANNELS

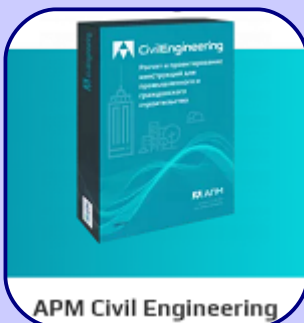
DEFINITION – CLASSIFICATION – RECTANGULAR AND TRAPEZOIDAL CHANNELS – DISCHARGE – CHEZY'S FORMULA, BAZIN'S FORMULA AND MANNING'S FORMULA – HYDRAULIC MEAN DEPTH – PROBLEMS – CONDITIONS OF MAXIMUM DISCHARGE AND MAXIMUM VELOCITY – PROBLEMS – FLOW IN A VENTURIFLUME – UNIFORM FLOW IN CHANNELS – FLOW THROUGH A SLUICE GATE – TYPES OF CHANNELS – TYPICAL CROSS SECTIONS OF IRRIGATION CANALS – METHODS OF MEASUREMENTS OF VELOCITIES – CHANNEL LOSSES – LINING OF CANALS – ADVANTAGES OF LINING OF CANALS – TYPES OF LINING – CEMENT CONCRETE LINING WITH SKETCHES – SOIL CEMENT LINING WITH SKETCHES – LOPE LINING.

TEXT BOOK

1. DR. JAGADISH LAL – HYDRAULICS, FLUID MECHANICS AND HYDRAULIC MACHINES – METRO POLITAN BOOK COMPANY-NEW DELHI
2. P.N. MODI & S.M. SETHI – FLUID MECHANICS – STANDARD PUBLISHERS – NEW DELHI

REFERENCE BOOK:

1. S. RAMAMURTHI – HYDRAULICS, FLUID MECHANICS AND HYDRAULICS MACHINES – DHANPAT RAI & SONS, NEW DELHI
2. K.L. KUMAR – FLUID MECHANICS – EURASA PUBLISHING HOUSE – NEW DELHI
3. R.K. BANSAL – FLUID MECHANICS – LAKSHMI PUBLICATIONS
4. PROF. S. NAGARATHINAM – FLUID MECHANICS – KHANNA PUBLISHERS – NEW DELHI
5. K.R. ARORA – HYDRAULICS, FLUID MECHANICS AND HYDRAULICS MACHINES – STANDARD PUBLISHERS & DISTRIBUTORS, NEW DELHI
6. BCS RAO – FLUID MECHANICS AND MACHINERY – TATA-MCGRAW-HILL PVT. LTD., NEW DELHI



STC APM

SYLLABUS COACHING
TRAINING – 2/UNIT TRAINING
SELF – 4/UNIT ASSIGNMENT
PRESENTATION – 2/UNIT
SHOWTIME – 2/UNIT

MATHS ILLUSTRATION – GEOMETRY EXPRESSIONS



ASCON RENG

SYLLABUS PERIOD
TRAINING – 2/2 HRS/UNIT
REMOTE – 2/2 HRS/UNIT
DURATION – SEMESTER
ONLINE/REMOTE ACCESS

MECHANICAL EXPRESSIONS – ANALYTIX CAMS



ARCADIA BIM

FEATURES
TRAINING BY IND. PROFESSIONAL
INDUSTRY APPLICATION
TRAINER OPPORTUNITY
CERTIFICATION