

**DEMAND****PAVIATH INTEGRATED SOLUTION****CIVIL ENGG****CIVIL UNIV****STRUCTURAL ANALYSIS I****Paviath ONLINE**

◆ CIVIL UNIVERSITY ◆ SECOND YEAR II SEMESTER ◆ CODE A40115

**UNIT - I**

ANALYSIS OF PERFECT FRAMES: TYPES OF FRAMES- PERFECT, IMPERFECT AND REDUNDANT PIN JOINTED FRAMES. - ANALYSIS OF DETERMINATE PIN JOINTED FRAMES  
USING METHOD OF JOINTS, METHOD OF SECTIONS AND TENSION COEFFICIENT METHOD  
FOR VERTICAL LOADS, HORIZONTAL LOADS AND INCLINED LOADS.

**UNIT - II**

ENERGY THEOREMS: INTRODUCTION-STRAIN ENERGY IN LINEAR ELASTIC SYSTEM, EXPRESSION OF STRAIN ENERGY DUE TO AXIAL LOAD, BENDING MOMENT AND SHEAR FORCES - CASTIGLIANO'S FIRST THEOREM-UNIT LOAD METHOD. DEFLECTIONS OF SIMPLE BEAMS AND PIN- JOINTED PLANE TRUSSES. DEFLECTIONS OF STATICALLY DETERMINATE BENT FRAMES. THREE HINGED ARCHES - INTRODUCTION - TYPES OF ARCHES - COMPARISON BETWEEN THREE HINGED AND TWO HINGED ARCHES. LINEAR ARCH, EDDY'S THEOREM. ANALYSIS OF THREE HINGED ARCHES. NORMAL THRUST AND RADIAL SHEAR IN AN ARCH. GEOMETRICAL PROPERTIES OF PARABOLIC AND CIRCULAR ARCH. THREE HINGED CIRCULAR ARCH AT DIFFERENT LEVELS. ABSOLUTE MAXIMUM BENDING MOMENT DIAGRAM FOR A THREE HINGED ARCH.

**UNIT-III**

PROPPED CANTILEVER AND FIXED BEAMS: ANALYSIS OF PROPPED CANTILEVER AND FIXED BEAMS, INCLUDING THE BEAMS WITH VARYING MOMENTS OF INERTIA, SUBJECTED TO UNIFORMLY DISTRIBUTED LOAD, CENTRAL POINT LOAD, ECCENTRIC POINT LOAD, NUMBER OF POINT LOADS, UNIFORMLY VARYING LOAD, COUPLE AND COMBINATION OF LOADS - SHEAR FORCE AND BENDING MOMENT DIAGRAMS FOR PROPPED CANTILEVER AND FIXED BEAMS-DEFLECTION OF PROPPED CANTILEVER AND FIXED BEAMS; EFFECT OF SINKING OF SUPPORT, EFFECT OF ROTATION OF A SUPPORT.

**UNIT - IV**

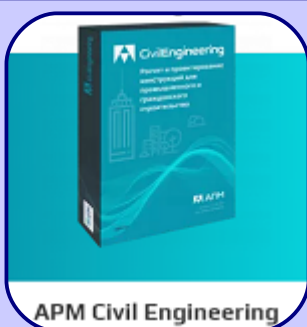
SLOPE- DEFLECTION METHOD AND MOMENT DISTRIBUTION METHOD: INTRODUCTION- CONTINUOUS BEAMS. CLAPEYRON'S THEOREM OF THREE MOMENTS- ANALYSIS OF CONTINUOUS BEAMS WITH CONSTANT AND VARIABLE MOMENTS OF INERTIA WITH ONE OR BOTH ENDS FIXED-CONTINUOUS BEAMS WITH OVERHANG. EFFECTS OF SINKING OF SUPPORTS. DERIVATION OF SLOPE-DEFLECTION EQUATION. APPLICATION TO CONTINUOUS BEAMS WITH AND WITHOUT SETTLEMENT OF SUPPORTS. ANALYSIS OF CONTINUOUS BEAMS WITH AND WITHOUT SETTLEMENT OF SUPPORTS USING MOMENT DISTRIBUTION METHOD. SHEAR FORCE AND BENDING MOMENT DIAGRAMS, ELASTIC CURVE.

**UNIT - V**

MOVING LOADS AND INFLUENCE LINES: INTRODUCTION MAXIMUM SF AND BM AT A GIVEN SECTION AND ABSOLUTE MAXIMUM S.F. AND B.M DUE TO SINGLE CONCENTRATED LOAD U.D LOAD LONGER THAN THE SPAN, U.D LOAD SHORTER THAN THE SPAN, TWO POINT LOADS WITH FIXED DISTANCE BETWEEN THEM AND SEVERAL POINT LOADS-EQUIVALENT UNIFORMLY DISTRIBUTED LOAD-FOCAL LENGTH. DEFINITION OF INFLUENCE LINE FOR SF, INFLUENCE LINE FOR BM- LOAD POSITION FOR MAXIMUM SF AT A SECTION-LOAD POSITION FOR MAXIMUM BM AT A SECTION - POINT LOADS, UDL LONGER THAN THE SPAN, UDL SHORTER THAN THE SPAN- INFLUENCE LINES FOR FORCES IN MEMBERS OF PRATT AND WARREN TRUSSES.

**TEXT BOOKS:**

- 1) STRUCTURAL ANALYSIS VOL -I & II BY VAZARANI AND RATWANI, KHANNA PUBLISHERS.
  - 2) STRUCTURAL ANALYSIS VOL I & II BY PUNDIT AND GUPTA., TATA MCGRAW HILL PUBLISHERS.
- REFERENCES:
- 1) BASIC STRUCTURAL ANALYSIS BY K.U.MUTHU ET AL., I.K.INTERNATIONAL PUBLISHING HOUSE PVT.LTD.
  - 2) STRUCTURAL ANALYSIS BY HIBBELER, PEARSON EDUCATION LTD
  - 3) BASIC STRUCTURAL ANALYSIS BY C.S.REDDY., TATA MCGRAW HILL PUBLISHERS.
  - 4) FUNDAMENTALS OF STRUCTURAL ANALYSIS BY M.L.GAMHIR, PHI.



APM Civil Engineering

**STC APM**

**SYLLABUS COACHING**  
TRAINING - 2/UNIT TRAINING  
SELF - 4/UNIT ASSIGNMENT  
PRESENTATION - 2/UNIT  
SHOWTIME - 2/UNIT

**ASCON RENG**

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

**ARCADIA BIM**

**FEATURES**  
TRAINING BY IND. PROFESSIONAL  
INDUSTRY APPLICATION  
TRAINER OPPORTUNITY  
CERTIFICATION