DEMAND

PAVIATH INTEGRATED SOLUTION

CIVIL ENGG

CIVIL POLY

STRUCTURAL ENGINEERING

Paviath ONLINE

◆ CIVIL POLY ◆ III YEAR V SEM ◆ CODE CEM51

OBJECTIVES:

- EXPLAIN THE CONCEPT OF WORKING STRESS AND LIMIT STATE METHODS OF RCC DESIGN.
- ANALYSES AND DESIGN SIMPLE RCC ELEMENT LIKE SINGLY, DOUBLE REINFORCED RECTANGLE BEAMS.
- ANALYSES AND DESIGN SINGLY RECTANGLE T-BEAM (CANTILEVERS, SIMPLY SUPPORTED / CONTINUOUS) FOR FLEXURE BY LIMIT STATE METHOD.
- DESIGN THE BEAMS FOR SHEAR BY LIMIT STATE METHOD.
- DESIGN ONE WAY SLABS AND STAIRCASE BY LIMIT STATE METHOD.
- DESIGN SIMPLY SUPPORTED AND RESTRAINED TWO WAY SLABS BY LIMIT STATE METHOD.
- DESIGN AXIAL LOADED SHORT COLUMNS BY LIMIT STATE METHODS.
- DESIGN RCC COLUMN FOOTINGS BY LIMIT STATE METHOD.
- ANALYSES AND DESIGN SIMPLE STEEL BEAM AND WELDED CONNECTIONS BY LIMIT STATE METHOD.

REINFORCED CEMENTCONCRETE STRUCTURES

1.INTRODUCTION TO WORKING STRESS AND LIMIT STATE METHOD

GENERAL, LIMIT STATE METHOD AND MOMENT OF RESISTANCE OF RECTANGULAR BEAM, CEMENT CONCRETE - MATERIALS USED IN R.C.C AND THEIR BASIC REQUIREMENTS – REINFORCED PURPOSE OF PROVIDING REINFORCEMENT – DIFFERENT TYPES AND GRADES OF CEMENT AND STEEL – CHARACTERISTIC STRENGTH AND GRADES OF CONCRETE – BEHAVIOR OF R.C MEMBERS IN BENDING – MODULAR RATIO AND EQUIVALENT AREA OF R.C. SECTIONS –DIFFERENT TYPES OF LOADS ON STRUCTURES AS PER IS: 875-1987-DIFFERENT METHODS OF DESIGN.

2.1 DESIGN OF T-BEAMS & LINTELS FORF LEXURE

CROSS SECTIONS OF TEE AND L – BEAMS – EFFECTIVE WIDTH OF FLANGE – NEUTRAL AXIS AND M.R OF SINGLY REINFORCED T-SECTIONS – DESIGN OF SINGLY REINFORCED T-BEAMS / L- BEAMS FOR FLEXURE – PROBLEMS ON CANTILEVERS (INVERTED – T) AND SIMPLY SUPPORTED T – BEAMS – LOADS ON ISOLATED LINTELS OVER OPENINGS OF MASONRY WALLS – DESIGN B.M FOR ISOLATED LINTELS CARRYING RECTANGULAR / TRIANGULAR LOADS - DESIGN OF LINTEL - SIMPLE PROBLEMS

3.DESIGNOFONEWAYSLABSANDSTAIRCASESBYLS.M

CLASSIFICATION OF SLABS – EFFECTIVE SPANS –LOADS (D LAND) ON FLOOR / ROOFS LAB SAND STAIRS (IS : 875-1987) – STRENGTH AND STIFFNESS REQUIREMENTS – MINIMUM AND MAXIMUM PERMITTED SIZE , SPACING AND AREA OF MAIN AND SECOND ARE REINFORCEMENTS AS PER IS456- 2000 – COVER REQUIREMENT TO REINFORCEMENTS IN SLABS – DESIGN OF CANTILEVER / SIMPLY SUPPORTED ONE WAY SLABS AND SUNSHADES BY LIMIT STATE METHOD – DESIGN OF CONTINUOUS SLABS USING B.M COEFFICIENTS – CHECK FOR SHEAR AND STIFFNESS – CURTAILMENT OF TENSION REINFORCEMENT – ANCHORING OF REINFORCEMENT – PRACTICE IN DESIGNING SLABS USING DESIGN AIDS (NOT FOR EXAMINATION)

4.1 DESIGN OF COLUMNS BY L.S.M

LIMIT STATE OF COLLAPSE IN COMPRESSION – ASSUMPTIONS – LIMITING STRENGTH OF SHORT AXIALLY LOADED COMPRESSION MEMBERS – EFFECTIVE LENGTH OF COMPRESSION MEMBERS – SLENDERNESS LIMITS FOR COLUMNS - CLASSIFICATION OF COLUMNS – MINIMUM ECCENTRICITY FOR COLUMN LOADS - LONGITUDINAL AND TRANSVERSE REINFORCEMENT REQUIREMENTS AS PER IS456 – 2000 – COVER REQUIREMENT – DESIGN OF AXIALLY LOADED SHORT COLUMNS WITH LATERAL TIES / HELICAL REINFORCEMENT – PRACTICE ON USE OF DESIGN AIDS (NOT FOR EXAMINATION).

STEEL STRUCTURES BY LIMIT STATE METHOD

5.1 DESIGN OF TENSION AND COMPRESSION MEMBERS BY L.S.M GENERAL – CHARACTERISTIC ACTIONS , PARTIAL SAFETY FACTORS FOR LOADS , DESIGN ACTIONS - ULTIMATE STRENGTH , PARTIAL SAFETY FACTORS FOR MATERIALS , DESIGN STRENGTHS OF MATERIALS - ROLLED STEEL SECTIONS – DIFFERENT FORMS OF TENSION MEMBERS – GROSS AREA , NET AREA AND NET EFFECTIVE SECTIONAL AREA OF TENSION MEMBERS – MAXIMUM PERMITTED VALUES OF EFFECTIVE SLENDERNESS RATIO – DESIGN STRENGTH OF TENSION MEMBERS AGAINST YIELDING OF GROSS SECTION , RUPTURE OF CRITICAL SECTION AND BLOCK SHEAR – DESIGN STRENGTH OF GIVEN PLATES / ANGLES CONNECTED TO GUSSETS BY BOLTS / WELDS – DESIGN OF TIES USING SINGLE / DOUBLE ANGLES , T - SECTIONS AND CHANNELS , DIFFERENT FORMS OF COMPRESSION MEMBERS – CLASSIFICATION OF CROSS SECTIONS – LIMITING WIDTH TO THICKNESS RATIO – EFFECTIVE SECTIONAL AREA – END CONDITIONS AND EFFECTIVE LENGTH OF COMPRESSION MEMBERS – MAXIMUM PERMITTED VALUES OF SLENDERNESS RATIO – IMPERFECTION FACTOR AND STRESS REDUCTION FACTOR – DESIGN STRENGTH OF COMPRESSION MEMBERS – PROBLEMS – – DESIGN OF SINGLE ANGLE AND DOUBLE ANGLE STRUTS –

5.2 DESIGN OF SIMPLE BEAMS AND WELDED CONNECTIONS

CLASSIFICATION OF STEEL BEAMS – EFFECTIVE SPAN - DESIGN PRINCIPLES – MINIMUM THICKNESS OF WEB – DESIGN STRENGTH IN BENDING / SHEAR –LIMITING DEFLECTION OF BEAMS – LATERAL BUCKLING OF BEAMS – MAXIMUM PERMITTED SLENDERNESS RATIO – PLASTIC MOMENT OF RESISTANCE AND PLASTIC SECTION MODULUS OF SECTIONS – SHAPE FACTOR – DESIGN OF LATERALLY SUPPORTED SIMPLE BEAMS USING SINGLE /DOUBLE ROLLED STEEL SECTIONS (SYMMETRICAL CROSS SECTIONS ONLY) (BUILT - UP BEAMS NOT INCLUDED) . TYPES OF WELDS – SIZE, EFFECTIVE AREA AND EFFECTIVE LENGTH OF FILLET WELDS – REQUIREMENTS OF WELDS – STRESSES IN WELDS – DESIGN STRENGTH OF FILLET / BUTT WELDS – LAP AND BUTT JOINTS FOR PLATE SAND ANGLES – PROBLEMS ON DESIGN OF WELDED CONNECTIONS FOR PLATES AND ANGLES (MOMENT RESISTANT CONNECTIONS NOT INCLUDED)

TEXT BOOK:

1. S.R.KARVE AND V.L.SHAH , " LIMIT STATE THEORY AND DESIGN OF REINFORCED CONCRETE " , PUNE VIDYA GRIHA PRAKASHAN

2. PCVARGHESE,"LIMITSTATEDESIGNOFREINFORCEDCONCRETE",PHILEARNINGPVT.LTD",2011 REFERENCE BOOK:

1. DR.S.RAMACHANDRA , LIMIT STATE DESIGN OF CONCRETE STRUCTURES " , SCIENTIFIC PUBLISHERS , 2004.

2. MALLICK AND RANGASAMY , " REINFORCED CEMENT CONCRETE " OXFORD-IBH.

3. N.KRISHNARAJU , " REINFORCED CONCRETE DESIGN " NEW AGE INTERNATIONAL PUBLICATIONS,2012

4. BCPUNMIA , " LIMIT STATE DESIGN OF REINFORCED CONCRETE " , LAXMI PUBLICATIONS,2007

5. B C PUNMIA , " RCC DESIGNS", LAXMI PUBLICATIONS, 2006

STC APM

MATHS ILLUSTRATION - GEOMETRY EXPRESSIONS

Renga

ASCON RENGA

MECHANICAL EXPRESSIONS – ANALYTIX CAMS

ArCADia SOFT

ArCADia BIM | ArCADia-RAMA | NTERsoft-INTELLICAD | uroConnections

ARCADIA BIM

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

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

FEATURES
TRAINING BY IND. PROFESSIONAL
INDUSTRY APPLICATION
TRAINER OPPORTUNITY
CERTIFICATION

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