DEMAND

PAVIATH INTEGRATED SOLUTION

CIVIL ENGG

CIVIL POLY

SOIL MECHANICS AND FOUNDATION ENGINEERING

Paviath ONLINE

◆ CIVIL POLY ◆ III YEAR ELECTIVE ◆ CODE CEM53.3

OBJECTIVES:

- INDENTIFY THE PROPERTIES OF SOIL, CLASSIFICATION AND STRENGTH OF SOILS.
- EXPLAIN ATTER BERG LIMITS
- DESCRIBE ABOUT THE SUB-SOIL SAMPLING
- EXPLAIN THE SEEPAGE ANALYSIS, BEARING CAPACITY OF SOIL AND SETTLEMENT OF FOUNDATIONS
- EXPLAIN THE TYPES OF FOUNDATIONS, PILES FOUNDATIONS AND PILE GROUPS.
- DESCRIBE THE FOUNDATIONS ON EXPANSIVE SOIL AND MACHINE FOUNDATIONS
- EXPLAIN REPLACEMENT OF SOILS AND "CNS" CONCEPT.

1.1 SOIL MECHANICS AND INDEX PROPERTIES
INTRODUCTION - DEVELOPMENT OF SOIL MECHANICS – FIELDS OF APPLICATION OF SOIL MECHANICS - SOIL FORMATION - COHESIVE AND COHESION LESS SOIL- SOIL PROPERTIES - 3PHASE SYSTEM – GENERAL , INDEX AND ENGINEERING PROPERTIES - DETAILED DESCRIPTION - ATTER BERG LIMITS – SIMPLE PROBLEMS
1.2 HYDRAULIC PROPERTIES OF SOIL
INTRODUCTION – PERMEABILITY - CO- EFFICIENT OF PERMEABILITY - DARCY'S LAW - FACTORS AFFECTING PERMEABILITY - PERMEABILITY TESTS – SIMPLE PROBLEMS - QUICK AND CONDITIONS

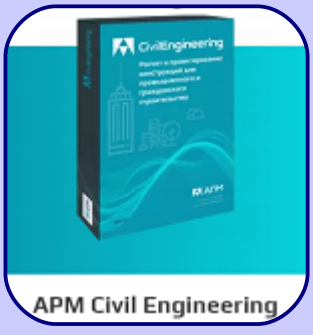
2.1 CLASSIFICATION AND STRENGTH OF SOIL
CLASSIFICATION OF SOIL - INTRODUCTION - NECESSITY – SYSTEMS OF SOIL CLASSIFICATION - FIELD IDENTIFICATION OF SOIL – SHEAR STRENGTH OF SOIL - INTRODUCTION - SHEAR STRENGTH - MOHR'S STRESS CIRCLE – MOHR - COULOMB FAILURE THEORY – SHEAR STRENGTH TEST – UNCONFINED COMPRESSION TEST - MOHR'S CIRCLE FOR UNCONFINED COMPRESSION TEST – COMPACTION – CONSOLIDATION CONSOLIDOMETER – OPTIMUM MOISTURE CONTENT - PROCTOR'S COMPACTION TEST – METHODS OF COMPACTION - DEGREE OF COMPACTION - FIELD DENSITY OF SOIL – TESTS - COMPACTION AND CONSOLIDATION – COMPARISON
2.2 STABILIZATION OF SOIL AND SUB- SOIL SAMPLING
STABILIZATION OF SOIL – INTRODUCTION – OBJECTS OF STABILIZATION – METHODS OF STABILIZATION – SOIL EXPLORATION – INTRODUCTION – OBJECTS OF EXPLORATION – METHODS OF THE SOIL EXPLORATION – DIRECT, SEMI – DIRECT AND INDIRECT METHODS – SPACING AND DEPTH OF TEST BORINGS – BORING LOG – SOUNDING AND PENETRATION TESTS – GEOPHYSICAL METHODS – SUB-SOIL SAMPLING – DISTURBED AND UNDISTURBED SAMPLES – TYPES OF SAMPLERS – SPLIT SPOON SAMPLERS – THIN – WALLED SAMPLER – CHUNK SAMPLING.

3.1 SEEPAGE ANALYSIS AND SEEPAGE BELOW HYDRAULIC STRUCTURE
SEEPAGE ANALYSIS – INTRODUCTION – HEAD, GRADIENT AND POTENTIAL – HYDRAULIC GRADIENT – SEEPAGE PRESSURE – UPWARD FLOW (QUICK CONDITION OR QUICK SAND) – TYPES OF FLOW LINES – TYPES OF FLOW (DEFINITION ONLY) – TWO DIMENSIONAL FLOW (LAPLACE EQUATION) – VELOCITY POTENTIAL – PROPERTIES OF FLOW NET – USES OF FLOW NET – SEEPAGE BELOW HYDRAULICS STRUCTURES – INTRODUCTION – HYDRAULIC GRADIENT – PIPING – EXIT GRADIENT - KHOSLA'S THEORY – SEEPAGE FLOW NETS BELOW HYDRAULIC STRUCTURES.
3.2 BEARING CAPACITY AND SETTLEMENT OF FOUNDATION
BEARING CAPACITY – INTRODUCTION – TERMINOLOGY – FACTORS AFFECTING BEARING CAPACITY OF SOILS – METHODS OF DETERRING BEARING CAPACITY – TYPES OF FAILURE IN SOIL – GENERAL , LOCAL AND PUNCHING SHEAR FAILURE – ANALYTICAL METHODS RANKINE ANALYSIS – TERZAGHI'S ANALYSIS - ASSUMPTION AND LIMITATIONS – EFFECT OF WATER TABLE – METHODS OF IMPROVING BEARING CAPACITY OF SOIL – SETTLEMENT OF FOUNDATION – INTRODUCTION – CAUSES AND EFFECT OF SETTLEMENT – PLATE LOAD TEST – SIMPLE PROBLEMS.

4.1 FOUNDATION
FOUNDATION – INTRODUCTION – DEFINITION – OBJECTIVE – REQUIREMENTS OF FOUNDATION – CRITERIA FOR SELECTION OF TYPES OF FOUNDATION - TYPES OF FOUNDATIONS – SHALLOW AND DEEP FOUNDATIONS - TYPES - FOUNDATION AT DIFFERENT LEVELS – FOUNDATION ON MADE UP GROUNDS – DEEP FOUNDATION – INTRODUCTION – PILE FOUNDATION – USES OF PILES – TYPES OF PILES – CAISSON FOUNDATION – TYPES – SELECTION OF PILES – PILE DRIVING – CAPACITY OF PILES – PILE LOAD TEST – FLOATATION FOUNDATION – NEGATIVE SKIN FRICTION – PILE GROUPS E FOUNDATION
INTRODUCTION – SOIL DYNAMICS – FREE VIBRATION AND FORCED VIBRATION – DEFINITION – NATURAL FREQUENCY – BARKEN'S METHOD PAUW'S METHOD – TYPES OF MACHINE AND MACHINE FOUNDATION – GENERAL REQUIREMENTS – DESIGN OF MACHINE FOUNDATIONS – RECIPROCATING TYPES – CENTRIFUGAL TYPE – IMPACT TYPE – STEPS TO DESIGN – COUZEN THEORY – IN –SITU DYNAMIC INVESTIGATION OF SOIL – METHOD – IS CODE OF PRACTICE – DESIGN CRITERIA – ISOLATION OF FOUNDATION SIMPLE PROBLEMS
5.2 FOUNDATIONS OF TRANSMISSION LINE TOWERS
INTRODUCTION – NECESSITY – FORCES ON TOWER FOUNDATIONS – GENERAL DESIGN CRITERIA – CHOICE AND TYPE OF FOUNDATIONS – DESIGN PROCEDURES – STABILITY CONDITIONS – DESCRIPTION

TEXT BOOK:
1. B.C.PUNMIA, "SOIL MECHANICS AND FOUNDATION ENGINEERING", LAXMI PUBLICATIONS (P) LTD., 2005
2. SWAMISARAN, "ANALYSIS AND DESIGN OF SUBSTRUCTURES" (LSD) – SECOND EDITION 2010
REFERENCE BOOK:
1. V N SMURTHY, " SOIL MECHANICS & FOUNDATION ENGINEERING"–SAI KRIPA TECHNICAL CONSULTANTS

2. DR S.B. SEHGAL,"A TEXT BOOK OF SOIL MECHANICS " , CBS PUBLISHERS & DISTRIBUTORS WAYNE C.T, " FOUNDATION DESIGN " ,PRENTICE HALL OF INDIA (P) LTD.,



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

info@paviathintegratedsolution.com -www.paviathintegratedsolution.com www.paviathjobportal.com