Graduate Engineers Capstone Training & Assessment **By Dr Kyaw Naing**

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Refer PEng Reg.pdf for Part 4-Specialist Area **http://www.mongroupsydney1.com/PEngReg.pdf**

www.highlightcomputer.com/graduatecapstone.htm

Graduate Engineer Capstone Assessment (Part 1)

Graduate Engineer Capstone Training & Assessment composes of a series of engineering application theory & practical training & assessment short courses that are to be voluntarily undertaken by fifth and final year BE & fourth year B Tech students to be able to acquire Registered Engineer (Independent Practice) and Registered Engineer (Supervised Practice) Licences.

The courses are either to be delivered & assessed by Registered Senior Engineers or Professional Engineer registered with Myanmar Engineering Council or the engineers with similar status in overseas engineer licensing authorities or the teaching staff of Technological Universities or the competent trainers / site engineers/ site technicians who have competency in providing the training & assessing the outcomes.

The students are to be issued with the record book in which the completion of the short courses are endorsed and sealed.

At the personal interview session to issue the licences, those records are checked by the licensing officers of Myanmar Engineering Council to provide the recommendation to issue the licences.

The training courses are to be arranged at Technological Universities or the branches of Myanmar Engineering Council or Myanmar Engineering Society or the training venues of the organization which are authorized by Myanmar Engineering Council to provide the training.

All graduating engineering students of all disciplines are required to complete Course Number 1 – General Engineering-Professional Conduct & Ethics.

After having completed the course 1, the followings are the courses and assessment to complete Graduate Capstone Part 1 to issue Registered Engineer (Supervised Practice) Licences

CIVIL ENGINEERING

Part 2-General Civil Engineering

Course 2 (CE) General Civil Engineering-Mechanics

Course 3 (CE) General Civil Engineering-Structure

Course 4 (CE) General Civil Engineering-Geo-technical

Course 5 (CE) General Civil Engineering- Transportation

Course 6 (CE) General Civil Engineering- Hydraulics ,Hydrology & Environmental

Part 3- Civil Engineering Practice

Course 7 (CE) Civil Engineering Practice-Rules & Regulations

Part 4-Specialist Area----------RSE Theory Part

ELECTRICAL ENGINEERING

Part 2 -General Electrical Engineering

Course 2- General Electrical Engineering-Power

Course 3-General Electrical Engineering-Building Services

Part 3 -l Electrical Engineering Practice

Course 4 Electrical Engineering Practice Rues & Regulations

Course 5 Electrical Engineering Practice –Green Energy

Course 6 Electrical Engineering Practice –Electricity Market

Course 7 Electrical Engineering Practice –Protection & Safety

Part 4-Specialist Area----------RSE Theory Part

MECHANICAL EENGINEERING

Part 2-General Mechanical Engineering-

Course 2- General Mechanical Engineering- Control And Instrumentations

Course 3- General Mechanical Engineering- Mechanics

Course 4- General Mechanical Engineering- Manufacturing

Course 5- General Mechanical Engineering- Heat Transfer

Part 2 Mechanical Engineering Practice

Course 6- Mechanical Engineering Practice - Piping

Course 7- Mechanical Engineering Practice – Air-conditioning & Mechanical Ventilation

Course 8- Mechanical Engineering Practice – Gas (Optional)

Course 9- Mechanical Engineering Practice – Lift and Hoisting Systems (Optional)

Course 10- Mechanical Engineering Practice – Energy Conservation for Mechanical Building Services (Optional)

Part 4-Specialist Area----------RSE Theory Part

The contents of the capstone courses are compared with the contents in academic curriculum subjects taught by Technological Universities. For the same contents, the results of the transcripts issued by Technological Universities are to be taken into account and only the contents which were not previously taught & assessed by Technological Universities are to be delivered and assessed.

At RSE Level, Handbook of Myanmar Board of Engineers is referred for specific RSE Discipline. As RSE level is specialist level, although the knowledge & proficiency required for several disciplines of RSE, not all contents & competency are expected to be acquired by a discipline RSE. They are the general guide and only the detailed theoretical and practical competencies acquired by RSE applicant is to be assessed.

The RSE applicants need to present the detailed information to prove his or her competency in the specific tasks and the endorsement will depend on such information.

After having completed Graduate Capstone Part 1, the graduating students will need to proceed to Graduate Capstone Part 2 Practical Assessment in which they will have to attend a series of practical short courses and assessment tasks are to be undertaken.

COURSE NUMBER 1 (GE)

Part 1 Professional conduct and ethics

(Common)

Professional conduct and ethics are important areas because most of the disciplinary actions taken by the Professional Engineers Board are in the area of ethics and not technical matters. Professionalism and ethics are closely related and inseparably bound as professional status and recognition are based on public interest. A professional engineer's judgment and decisions can have great impact on public health and safety. He is expected to uphold the dignity, standing and reputation of the profession. He shall practise ethically in relation to his clients, employers, fellow professionals and the public at large.

This is a common unit which has two sections on the Professional Engineers Act and Professional Conduct and Ethics. The course must be completed by all discipline students

Syllabus

The paper will focus on the latest revisions of the following Professional Engineers Act and Rules:

- Professional Engineers Act—Myanmar Engineering Council Rules/ Regulations
- Professional Engineers (Code of Professional Conduct and Ethics) Rules
- Professional Engineers Rules

References will also be made to past disciplinary actions taken by the Professional Engineers Board arising from complaints against professional engineers.

Questions will be set to test the candidates' understanding and interpretation of the provisions in the act and rules as well as how they will tackle hypothetical cases involving the clients, the employers, fellow professionals and the public at large.

CIVIL ENGINEERING

After having completed , course Number 1 (GE), the specialist capstone courses are required to be completed by the students

Part 2- General Civil Engineering (Reference: Singapore Professional Engineers Board)

Course 2 (CE) General Civil Engineering-Mechanics

CE 101 Mechanics of Materials

 Mechanics of Materials

Strength, stiffness and deformability; Stress-strain relations; ductility and brittle fracture; time-dependent properties; creep, creep rupture; relaxation; cyclic load behaviour.

 Concrete Technology

Concrete-making materials, properties of fresh and hardened concrete, mixing, placing, and curing, mix design, destructive and non-destructive tests, quality control, durability, and special concrete.

 Steel

Basic metallurgy, mechanical properties and applications, welding technology and corrosion.

CE 102 Structural Mechanics

 Structural Mechanics

Statics and kinetics of particles, equilibrium of rigid bodies, kinematics and plane motion of rigid bodies, analysis of simple trusses and beams, analysis of structural members subjected to tension, compression, torsion, and bending, including such fundamental concepts as stress, strain, and elastic behaviour. Bar forces in compound and complex trusses. Bending moment, shear and axial forces of beams and frames.

 CE 103 Structural Analysis

 Structural Analysis

Displacements of elastic determinate structures: principle of virtual work and energy theorems. Analysis of indeterminate structures. Deformation of indeterminate structures and

influence line method. Displacement techniques using slope-deflection and moment distribution methods. Plastic theory and analysis. Theory and applications of modern structural analysis. Concepts of equilibrium, compatibility and force-displacement relationships. Direct stiffness method. Matrix formulation of trusses, beams and frames. Stability concepts and elastic stability analysis of framed structures.

CE 104 Soil Mechanics

Basic geology, unified soil classification system, mechanical properties, effective stress principle, shear strength, compressibility, and seepage and consolidation; Mohr-Coulomb failure criterion (drained and undrained), settlement calculations, rate of consolidation using classical Terzaghi theory.

CE 105 Fluid Mechanics

Fluid Statics

Fluid properties; hydrostatic pressure and thrust; buoyancy; stability of floating bodies.

Fluid Motion

Continuity equations; Bernoulli's equation; linear momentum equation.

Similitude

Dimensional analysis; design of hydraulic models.

Course 3 (CE) General Civil Engineering-Structure

CE 201 Reinforced and Prestressed Concrete Structures

RC Design

Basic structural members and structural systems. Loads and load effects. Section analysis and design for bending. Design for shear, torsion and bond. Corbels. Serviceability and durability requirements. Design of short and slender columns. Design of slab systems. Concentrated loads on slabs. Design

of foundations. Retaining walls. Reinforced concrete detailing.

 Prestressed Concrete Design

Basic concepts of prestressing. Materials and prestressing systems. Prestressed losses and time dependent deformation. Behaviour and design of members subject to flexure, shear and combined axial and bending action.

 CE 202 Steel and Composite Structures

 Steel Design

Limit state design. Material properties and structural responses. Local buckling and section classifications. Design of fully restrained beams. Shear buckling and design of plate girder. Web bearing and buckling. Design of web stiffeners. Lateral-torsional buckling and design of laterally unrestrained beams. Tension and compression members. Axially loaded members with end moments. Design of steel connections. Plastic design of portal frames. Continuous multi-storey frames.

 Composite (Steel-Concrete) Design

Structural modeling and design concepts. Moment capacity and shear resistance, full and partial connection of composite beams. Design of composite slab. Design of composite columns.

Course 4 (CE) General Civil Engineering-Geo-technical

 CE 203 Geotechnical Engineering

 Slope Stability and Earth Retaining Structures

Introduction to slope stability and earth retaining structures; slopes and embankments; earth pressure and retaining structures; deep excavations; calculation of active and passive earth pressures; design considerations pertaining to deep excavations.

 Foundation Engineering

Site investigation and interpretation of soil reports; shallow

foundations and deep foundations; selection of appropriate foundation type; capacity and settlement requirements.

Course 5 (CE) General Civil Engineering- Transportation

CE 204 Transportation

 Transportation Engineering

Transportation systems, planning and management; geometric design of roads and intersections; design of flexible and rigid pavements.

 Traffic Engineering

Traffic flow studies; traffic data analysis; traffic management; highway and intersection capacity; traffic signal control. Parking.

Course 6 (CE) General Civil Engineering- Hydraulics ,Hydrology & Environmental

 CE 205 Hydraulics and Hydrology

 Hydraulics

Friction and minor losses in pipe flow; pipe and pump systems; pipe network analysis; open channel flow; uniform flow, Manning's equation; critical flow; energy and momentum principles; hydraulic jumps; gradually varied flows, backwater computation.

 Hydrology

Processes in the hydrologic cycle: basic meteorology, rainfall precipitation, evaporation and transpiration, infiltration, sub-surface flow, surface runoff, streamflow measurement and hydrograph analysis; unit hydrograph principles and applications; frequency analysis of rainfall or flood data; reservoir and channel flood routing; urban storm drainage design, flood peak estimation.

 CE 206 Environmental Engineering

 Environmental Engineering

Basic physical, chemical and biological water quality parameters;

physical, chemical, and biological processes for water and wastewater treatment; water treatment principles and design; water distribution systems; wastewater collection and pumping systems; wastewater treatment design; pretreatment, primary, secondary, tertiary treatment, and anaerobic digestion.

Part 3- Civil Engineering Practice

Course 7 (CE) Civil Engineering Practice-Rules & Regulations

Syllabus

The list of reference literature, codes, acts, regulations, etc appended below is meant as a guide and is not exhaustive.

- Acts and Regulations
- Professional Engineers Act and Regulations
- Building Control Act and Regulations
- Publications
- URA
  - Planning Control Handbooks and Guidelines for Building Works
- SCDF
  - Code of Practice for Fire Precautions in Buildings
  - Handbook on Fire Precautions in Buildings
  - FSSD Fire Safety Handbooks
- LTA
  - Guidelines & Publications on Rapid Transit Systems

Building Works & Restricted Activities in Railway Protection Zone

  - Street Proposals
  - Vehicle Parking
  - Other Guidelines and Standards
- NEA
  - Code of Practice on Environmental Health
  - Code of Practice on Pollution Control

 PUB

- Code of Practice on Surface Water Drainage
- Standard Specifications for Drainage Works
- Code of Practice on Sewerage and Sanitary Works
- Sewerage and Drainage Standard Drawings

 NParks

- Procedures and Guidelines for Plan Submissions

 MOM

- Workplace Safety & Health Act and Subsidiary Legislations

 BCA

- National Productivity and Quality Specification (NPQS)
- Guidelines and Handbooks on Civil Defence Shelters
- Code of Practice on Buildable Design

 Civil Engineering Codes/Standards

- Codes and Standards under Building Control Act and Regulations
- Codes and Standards for Roads and Transit Systems to LTA's Requirements

Part 4-Specialist Area----------RSE Theory Part (Reference Myanmar Board of Engineers)

RSE are required to demonstrate all or part of the topics in their specialist practice area. The demonstration is by means of various ways as described in the RSE assessment part of the flow chart

Construction PE

Scope (Building Construction PE)

(A) Earthwork Construction & Layout
- Excavation & Layout (cut & fill)
- Borrow pit volumes
- Site layout & control

(B) Estimating Quantities & Costs
- Builder's estimate & Builder's quantity
- Cost Estimating
- Cost Controlling

(C) Scheduling
- Construction sequencing
- Resource scheduling
- Planograph & CPM analysis
- Engineering management

(D) Design & Drawings
- Basic design principles
- Shop drawings

(E) Materials Quality Control & Production
- Materials specifications & testings (Cement, Coarse and fine aggregate, Water, Construction chemicals, Structural steel, Timber etc,)
- Welding & bolting testing
- Quality control process (QA/ QC)
- Concrete (Plain, Reinforced, Prestressed, Post tensioned, Fiber reinforced concrete, Ferrocement, High performance concrete,Light weight concrete)
- Concrete mix design
- Concrete maturity & early strength evaluation

(F) Temporary Structures
- Construction Load
- Formwork
- False work & Scaffolding
- Shoring & reshoring
- Bracing
- Anchorage

(G) Geotechnical & Foundation Engineering
- Types of foundation
- Soil classification
- Boring log interpretation (e.g soil profile etc;)
- Pressure distribution
- Lateral earth pressure
- Consolidation
- Compaction
- Slope Stability
- Slabs on grade
- Bearing Capacity
- Settlement
- Retaining Walls (gravity walls, RC walls, cantilever walls etc;)
- Braced & anchored excavation

(H) Structural Engineering
- Loadings (dead loads, live loads, E.Q Loads, wind loads, snow loads, construction loads, load paths, etc;)
- Shear force diagram
- Bending moment diagram
- Flexure, Shear, Tension, Compression, Torsion
- Combined stresses
- Deflection

(I) Construction Equipment
- Design of equipment fleet operation & productivity
- Design of rigging & conveying system

(J) Safe Demolition System for Constructed Facilities

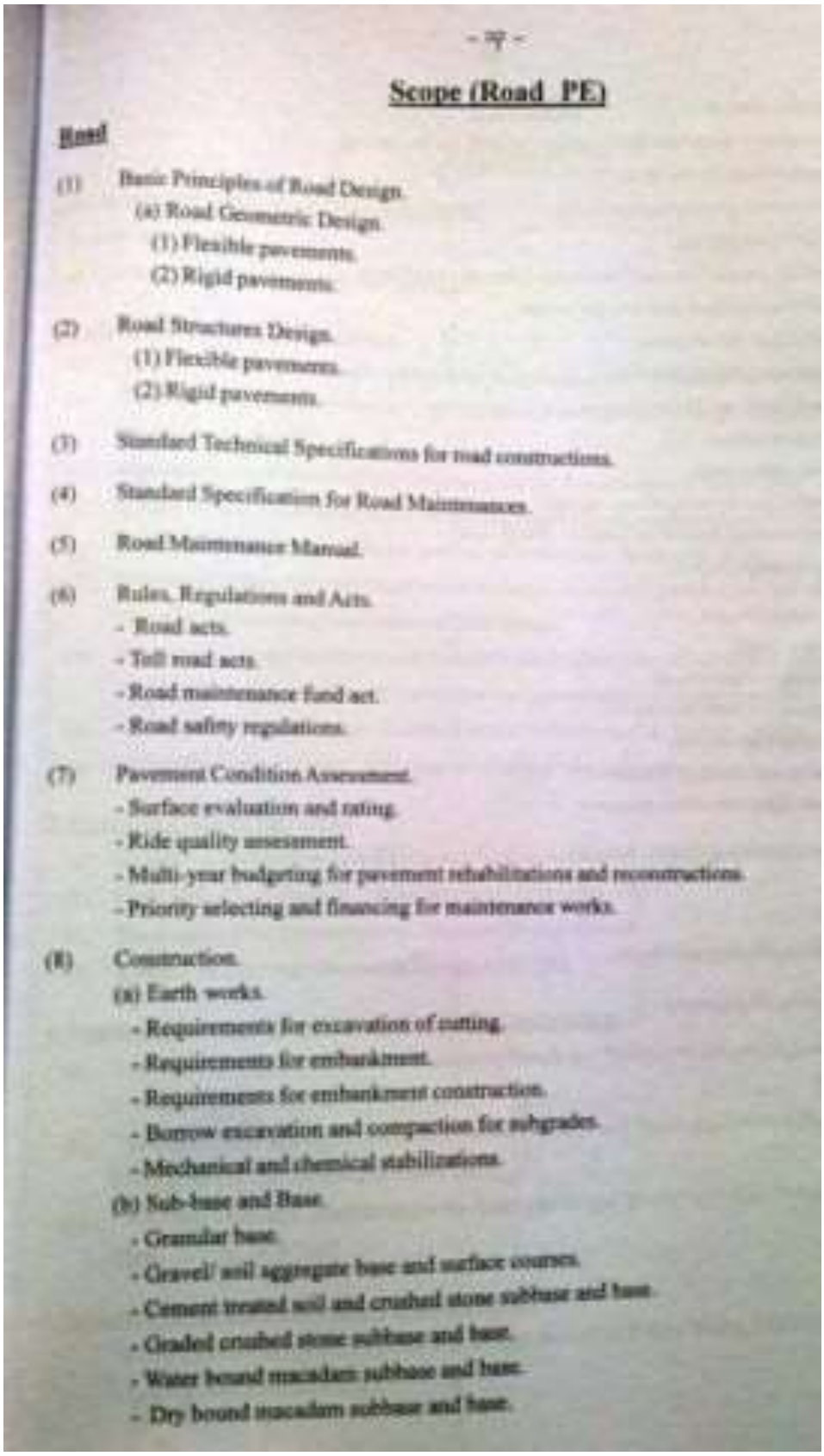
(K) Engineering Ethics

(L) Occupational Safety and Health

(M) Code of Practice, Rules & Regulations

(N) Computer Skill

Road PE



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Scope (Road PE)

Road

(1) Basic Principles of Road Design.
- (a) Road Geometric Design.
  - (1) Flexible pavements.
  - (2) Rigid pavements.

(2) Road Structures Design.
- (1) Flexible pavements.
- (2) Rigid pavements.

(3) Standard Technical Specifications for road constructions.

(4) Standard Specification for Road Maintenances.

(5) Road Maintenance Manual.

(6) Rules, Regulations and Acts.
- Road acts.
- Toll road acts.
- Road maintenance fund act.
- Road safety regulations.

(7) Pavement Condition Assessment.
- Surface evaluation and rating.
- Ride quality assessment.
- Multi-year budgeting for pavement rehabilitations and reconstructions.
- Priority selecting and financing for maintenance works.

(8) Construction.

(a) Earth works.
- Requirements for excavation of cutting.
- Requirements for embankment.
- Requirements for embankment construction.
- Borrow excavation and compaction for subgrades.
- Mechanical and chemical stabilizations.

(b) Sub-base and Base.
- Granular base.
- Gravel/ soil aggregate base and surface courses.
- Cement treated soil and crushed stone subbase and base.
- Graded crushed stone subbase and base.
- Water bound macadam subbase and base.
- Dry bound macadam subbase and base.

(c) Surface courses.
- Bituminous macadam (penetration method) surface course.
- Asphalt concrete pavement.
- Bituminous premix surface course.
- Cold mixed asphalt.
- Portlant cement concrete pavement (plain and reinforced).
- Roller compacted concrete pavement.
- Recycling of pavement.

(d) Drain and Drainage system.

(e) Road Signs and Safety measure.
- Road furnitures.
- Road safety audit.
- Road signs, Road markings, signals.
- Improvement hazardous location (Black spot).

(f) Environment impect.

(9) Maintenance Works.
- Gravel roads.
- Bituminous pavements.
- Asphalt concrete pavements.
- Concrete pavements.
- Drains and drainage structures.
- Road signs and safety measures.

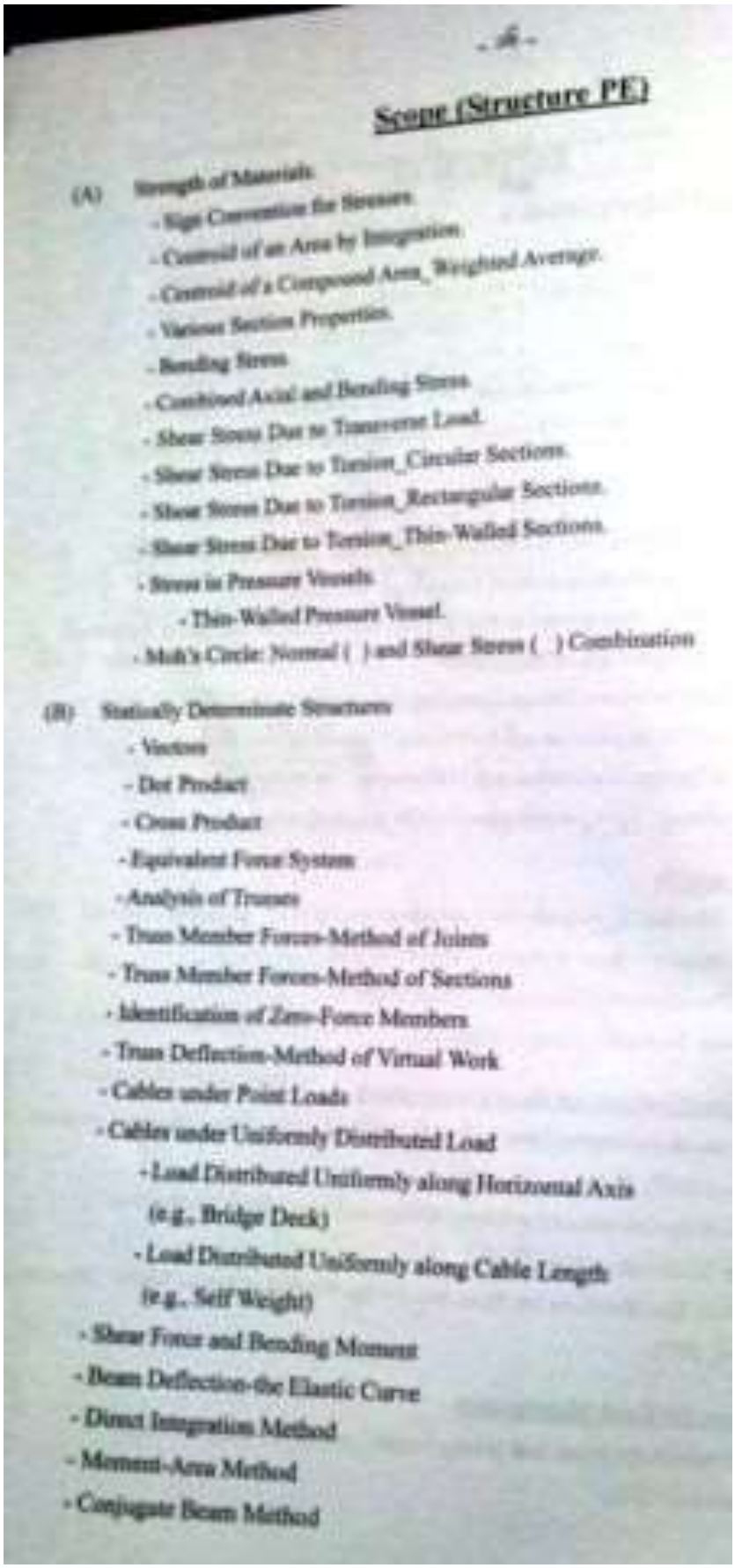
(10) Quality Control and Quality Assurance.

(11) Ethics.

(12) Occupational Safety and Health.

(13) Engineering Management.

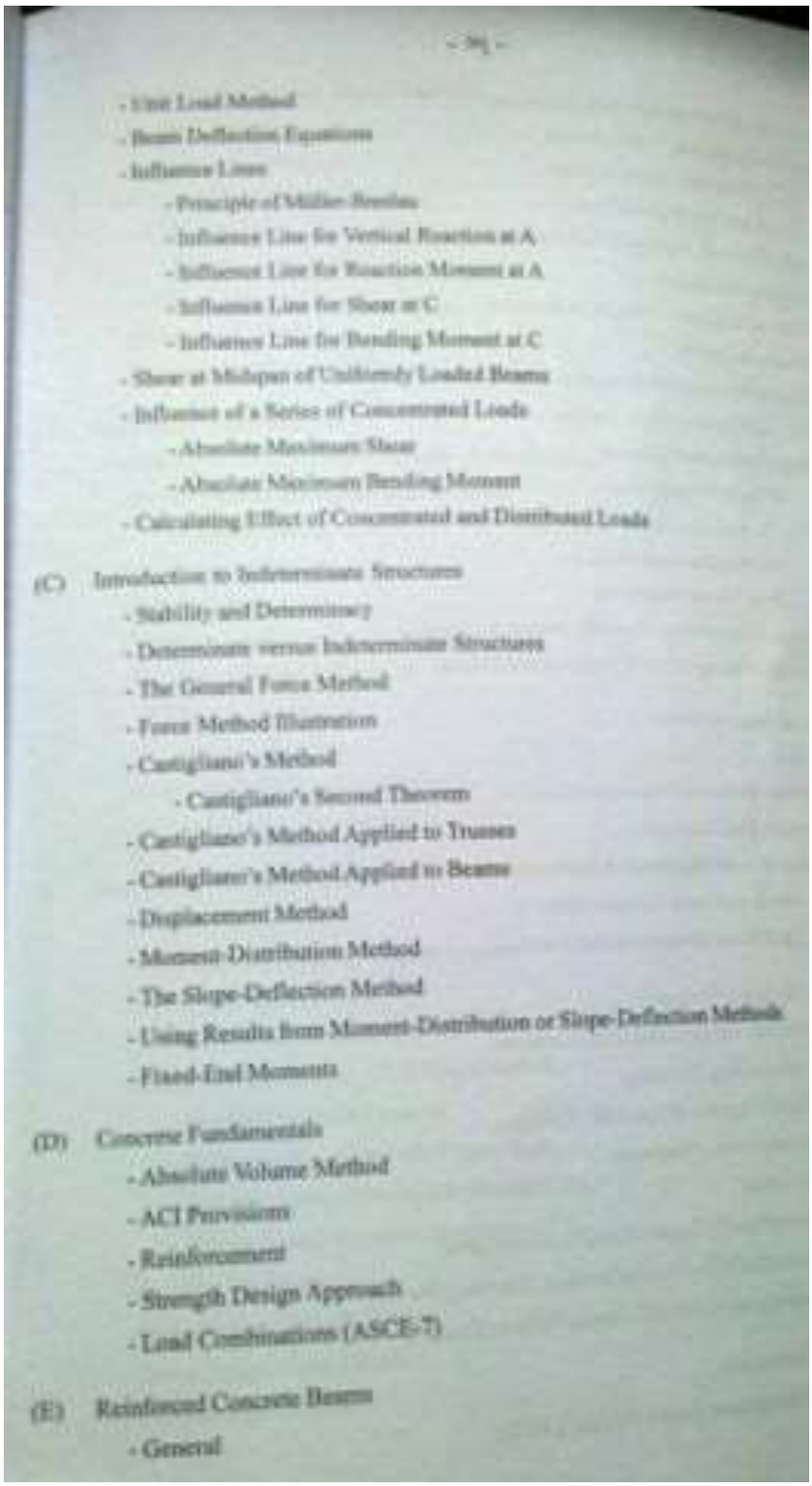
Structure PE



Scope (Structure PE)

(A) Strength of Materials
- Sign Convention for Stresses
- Centroid of an Area by Integration
- Centroid of a Compound Area_Weighted Average
- Various Section Properties
- Bending Stress
- Combined Axial and Bending Stress
- Shear Stress Due to Transverse Load
- Shear Stress Due to Torsion_Circular Sections
- Shear Stress Due to Torsion_Rectangular Sections
- Shear Stress Due to Torsion_Thin-Walled Sections
- Stress in Pressure Vessels
  - Thin-Walled Pressure Vessel
- Mohr's Circle: Normal ( ) and Shear Stress ( ) Combination

(B) Statically Determinate Structures
- Vectors
- Dot Product
- Cross Product
- Equivalent Force System
- Analysis of Trusses
- Truss Member Forces-Method of Joints
- Truss Member Forces-Method of Sections
- Identification of Zero-Force Members
- Truss Deflection-Method of Virtual Work
- Cables under Point Loads
- Cables under Uniformly Distributed Load
  - Load Distributed Uniformly along Horizontal Axis (e.g., Bridge Deck)
  - Load Distributed Uniformly along Cable Length (e.g., Self Weight)
- Shear Force and Bending Moment
- Beam Deflection-the Elastic Curve
- Direct Integration Method
- Moment-Area Method
- Conjugate Beam Method

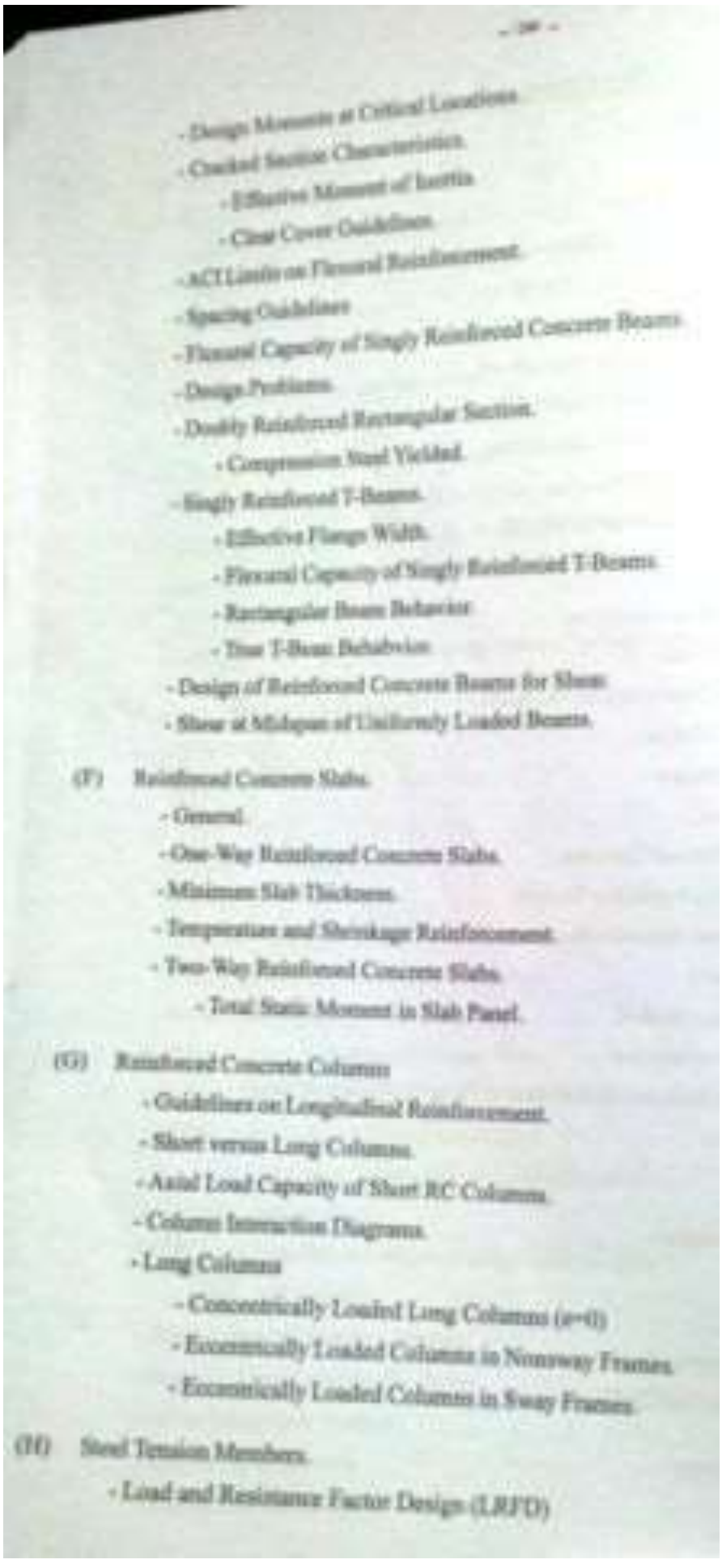


- Unit Load Method
- Beam Deflection Equations
- Influence Lines
  - Principle of Müller-Breslau
  - Influence Line for Vertical Reaction at A
  - Influence Line for Reaction Moment at A
  - Influence Line for Shear at C
  - Influence Line for Bending Moment at C
- Shear at Midspan of Uniformly Loaded Beams
- Influence of a Series of Concentrated Loads
  - Absolute Maximum Shear
  - Absolute Maximum Bending Moment
- Calculating Effect of Concentrated and Distributed Loads

(C) Introduction to Indeterminate Structures
- Stability and Determinacy
- Determinate versus Indeterminate Structures
- The General Force Method
- Force Method Illustration
- Castigliano's Method
  - Castigliano's Second Theorem
- Castigliano's Method Applied to Trusses
- Castigliano's Method Applied to Beams
- Displacement Method
- Moment-Distribution Method
- The Slope-Deflection Method
- Using Results from Moment-Distribution or Slope-Deflection Methods
- Fixed-End Moments

(D) Concrete Fundamentals
- Absolute Volume Method
- ACI Provisions
- Reinforcement
- Strength Design Approach
- Load Combinations (ASCE-7)

(E) Reinforced Concrete Beams
- General



- Design Moments at Critical Locations
- Cracked Section Characteristics
  - Effective Moment of Inertia
  - Clear Cover Guidelines
- ACI Limits on Flexural Reinforcement
- Spacing Guidelines
- Flexural Capacity of Singly Reinforced Concrete Beams
- Design Problems
- Doubly Reinforced Rectangular Section
  - Compression Steel Yielded
- Singly Reinforced T-Beams
  - Effective Flange Width
  - Flexural Capacity of Singly Reinforced T-Beams
  - Rectangular Beam Behavior
  - True T-Beam Behabvior
- Design of Reinforced Concrete Beams for Shear
- Shear at Midspan of Uniformly Loaded Beams

(F) Reinforced Concrete Slabs

- General
- One-Way Reinforced Concrete Slabs
- Minimum Slab Thickness
- Temperature and Shrinkage Reinforcement
- Two-Way Reinforced Concrete Slabs
  - Total Static Moment in Slab Panel

(G) Reinforced Concrete Columns

- Guidelines on Longitudinal Reinforcement
- Short versus Long Columns
- Axial Load Capacity of Short RC Columns
- Column Interaction Diagrams
- Long Columns
  - Concentrically Loaded Long Columns ($e=0$)
  - Eccentrically Loaded Columns in Nonsway Frames
  - Eccentrically Loaded Columns in Sway Frames

(H) Steel Tension Members

- Load and Resistance Factor Design (*LRFD*)

- Analysis and Design of Tension Members
- Nominal Strength
- Net Area in Tension
- Net Area for Staggered Bolt Lines
- Effective Net Area
  - Shear Lag Coefficient
- Area Load Tables
- Block Shear
- Pin-Connected Tension Members

(2) Steel Compression Members
- Stability of Axially Loaded Columns, Euler Buckling
- Critical Buckling Stress for Steel Columns
  - Elastic Buckling
  - Inelastic Buckling
- Braced Columns
- Effective Length for Columns in a Frame
- Columns with Slender Elements
  - Elastic Buckling
  - Inelastic Buckling
- Single-Angle Compression Elements
- Built-Up Compression Members

(3) Steel Beams, Design for Flexure
- General Flexure Theory
- Progressive Increase of Flexural Moment
- Elastic Section Modulus
- Plastic Section Modulus
- Design of Steel Beams, AISC Specifications
  - Nominal Moment Capacity
  - Failure by Reaching Fully Plastic State
  - Inelastic Lateral Torsional Buckling (LTB)
  - Elastic Lateral Torsional Buckling (LTB)
- Bending Coefficient C_b
- Beam Design Using Z_x Tables
- Beam Design Using Charts
- Compactness Criteria

- Flexural Strength of Noncompact Sections.
  - Flange Local Buckling (FLB)
  - Lateral Torsional Buckling (LTB)
- Design for Shear
- Floor Framing Systems.

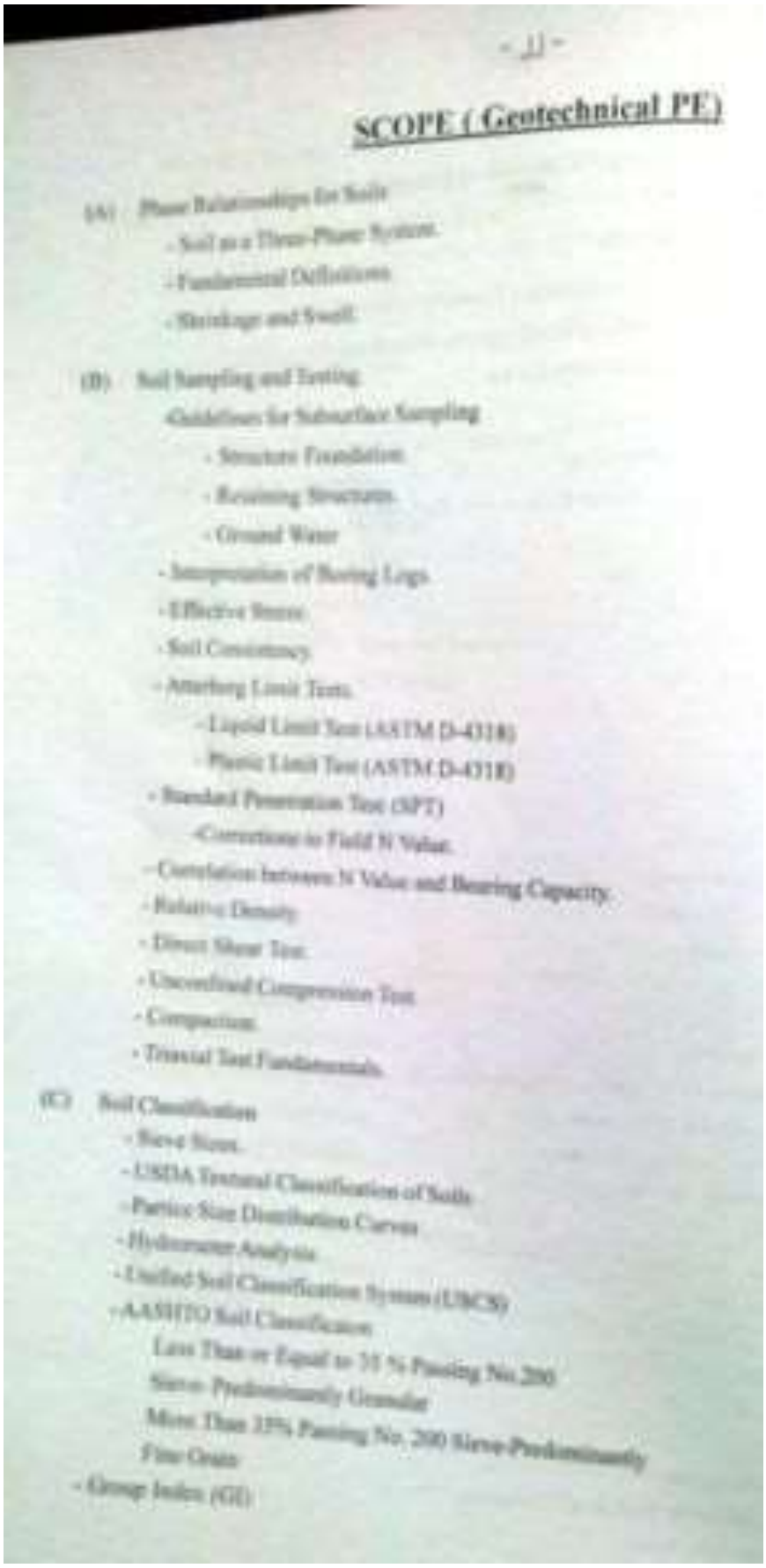
(K) Bolted and Welded Connections.

- General
- Snug-Tight versus Slip-Critical Connections
- Bearing Type Connections
  - Bearing Strength of Bolts.
  - Shear Strength of Bolts.
- Slip-Critical Connections.
- Bolt Group Subject to Shear and Torsion.
- Bolts Subject to Shear and Tension.
- Fillet-Welded Joints.
- Fillet Weld Features.
- Strength of a Fillet Weld.
- Second Moments of Weld Runs.

(L) Timber Design

- Bending Stress.
- Shear Stress.
- Modulus of Elasticity.
- Stress Modification Factors.
- Design of Timber Columns.
  - Buckling Limit State.
  - Crushing Limit State.
  - Ylinen Column Equation.
- Section Properties of Beams and Joists.
- Section Properties of Planks.
- Section Properties of Decking.

Geotechnical PE



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SCOPE (Geotechnical PE)

(A) Phase Relationships for Soils
- Soil as a Three-Phase System
- Fundamental Definitions
- Shrinkage and Swell

(B) Soil Sampling and Testing
- Guidelines for Subsurface Sampling
  - Structure Foundation
  - Retaining Structures
  - Ground Water
- Interpretation of Boring Logs
- Effective Stress
- Soil Consistency
- Atterberg Limit Tests
  - Liquid Limit Test (ASTM D-4318)
  - Plastic Limit Test (ASTM D-4318)
- Standard Penetration Test (SPT)
  - Corrections to Field N Value
- Correlation between N Value and Bearing Capacity
- Relative Density
- Direct Shear Test
- Unconfined Compression Test
- Compaction
- Triaxial Test Fundamentals

(C) Soil Classification
- Sieve Sizes
- USDA Textural Classification of Soils
- Particle Size Distribution Curves
- Hydrometer Analysis
- Unified Soil Classification System (USCS)
- AASHTO Soil Classification
  - Less Than or Equal to 35 % Passing No. 200 Sieve- Predominantly Granular
  - More Than 35% Passing No. 200 Sieve-Predominantly Fine Grain
- Group Index (GI)

(D) Vertical Stress Increase at Depth
- Approximate Methods
- Boussinesq Model for Stress under Uniformly Loaded Area
- Newmark's Chart for Graphical solution of Boussinesq's Equation
  Boussinesq's Equation
  Stress Increase Due to a point Load
  Boussinesq's Theory
  Westergaard's Theory
  Stress Increase Due to a Line Load
  Stress Increase Due to a Strip Load
  Stress Increase Due to Uniformly Loaded Circular Footing
  Load on Buried Pipes
  Deflection of Flexible Pipes
  Modified Lowa Equation
  Minimum Burial Depth
  Loads on Rigid Pipes
  Indirect Design Method
  Load Factor
  Direct Design Method

(E) Flow through Porous Media
- Groundwater Distribution
- Darcy's Law for Seepage
- Hydraulic Conductivity
- Laboratory Measurement of Hydraulic Conductivity
  - Constant Head Test
  - Falling Head Tes
- Equivalent Hydraulic Conductivity (Layered Soils)
  - Flow Parallel to Soil Layers
  - Flow Transverse to Soil Layers
- Field Measurement of Hydraulic Conductivity
- Flow Nets
- Calculation of Seepage Flow from Flow Nets
- Anisotropic Soils
- Uplift Pressure under Hydraulic Structures
- Expansive Soils
- Gravity Dams
- Aquifers
- Unsteady Well Hydraulics_Theis Method
  - Assumptions for Transient Drawndown Effects
- Groundwater Dewatering

(F) Shallow Foundations

- General
- Ultimate Bearing Capacity
  - Terzaghi's Bearing Capacity
  - Local Shear Failure
  - General Bearing Capacity Equations
- Shape Correction Factors
- Depth Correction Factors

  For $D/B \leq 1$

  For $D/B > 1$
- Load Inclination Correction Factors
- Factor of Safety for Bearing Capacity
- Local Shear Failure
- Dynamic Loads
- Allowable Bearing Pressure in Sand Based on Settlement
- Effect of Water Table on Bearing Capacity
- Coefficient of Subgrade Reaction
  - Plate Load Test
  - For Sandy Soils
  - For Clays
- Combined Footing
- Combined Footing-Design
- Mat Foundations
- Differential Settlement of Mats
- Compensated Foundations
- Strap Footing __Design
- Eccentric Load on a Shallow Footing
- Shear in Footings:- One_Way and Two-Way Shear
- Elastic Settlement under Shallow Foundations

(G) Deep Foundations

- Site Conditions
- Pile Types
- Pile Classification
- Point Bearing Capacity
  - Point Bearing Capacity for Piles in Sand.
  - Point Bearing Capacity for Piles in Clay.
  - Point Bearing Capacity for Piles Resting on a Rock Layer.
- Side Friction Capacity
- Skin Friction Coefficient

- Lateral Earth Pressure Coefficient
- Capacity of Pile Groups
- Special Considerations for Steel H-Section Piles
  - H Piles in Sand
  - H Piles in Soft Clay
  - H Piles in Stiff Clay
- Pile Groups Subject to Overturning Moment
- Batter Piles
- Laterally Loaded Long Piles
- Pullout Resistance
- Negative Skin Friction
- Settlement of Piles
  - Elastic Settlement
  - Settlement Due to Tip Load
  - Settlement Due to Shaft Load
- Elastic Settlement of Pile Groups
- Consolidation Settlement of Pile Groups
- Pile-Driving Formula

(H) Retaining Walls
- Lateral Earth Pressure
- Wall Movement Necessary to Develop Lateral Pressures
- Stability and Strength Checks
- Active Earth Pressure
- Passive Earth Pressure
- Rankine's Theory for Earth Pressure
- Suitability Number
- Steps for Evaluating Stability of a Retaining Wall
- Retaining Wall with Key
- Horizontal Pressure on Retaining Walls Due to Surface Loads
  - Point Load on Surface
  - Line Load on Surface
- Mechanically Stabilized Earth (MSE) Walls

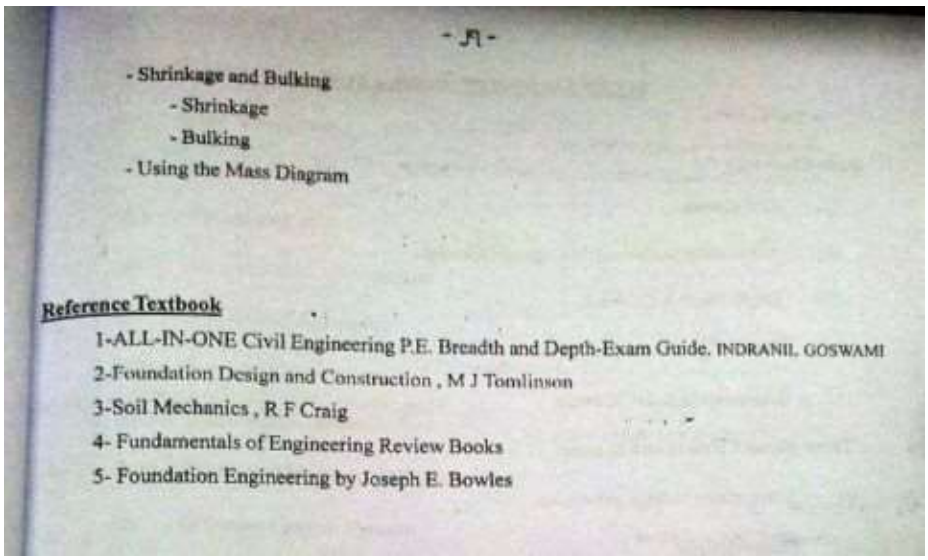
(I) Support of Excavation
- Types of Excavation
- Modes of Failure

- Stabilization
- Bottom Heave in a Cut in Clay
- Typical Plan and Elevation of a Braced Excavation
- Equivalent Pressure Diagrams for Braced Cuts.
  - Sand
  - Soft to Medium Clay
  - Stiff Clay
- Design of Sheet Pile Walls
  - Stability Design for Cantilever Walls
- Ultimate Resistance of Tiebacks
- OSHA Regulations for Excavations

(J) Slope Stability
- Modes of Slope Failure
- Causes of Slope Failure
- Total versus Effective Stress Analysis
- Stability of Infinite Slopes (No Seepage)
- Stability of Infinite Slopes (with Seepage)
- Stability of Finite Slopes
  - Generalized Method of Slices
- Stability of Finite Slope in Clay (Taylor)
- Slope Stabilization Methods
- Recommended Safety Factors
- Slope Protection

(K) Seismic Topics in Geotechnical Engineering
- Seismic Stress Waves
- Liquefaction
  - Shear Stress in Soil Due to Ground Acceleration
- Bearing Capacity under Dynamic Loading
- Cyclic Stress Ratio
- Glossary of Earthquake Related Terms

) Earthwork
- General
  - Computation of Earthwork Volumes



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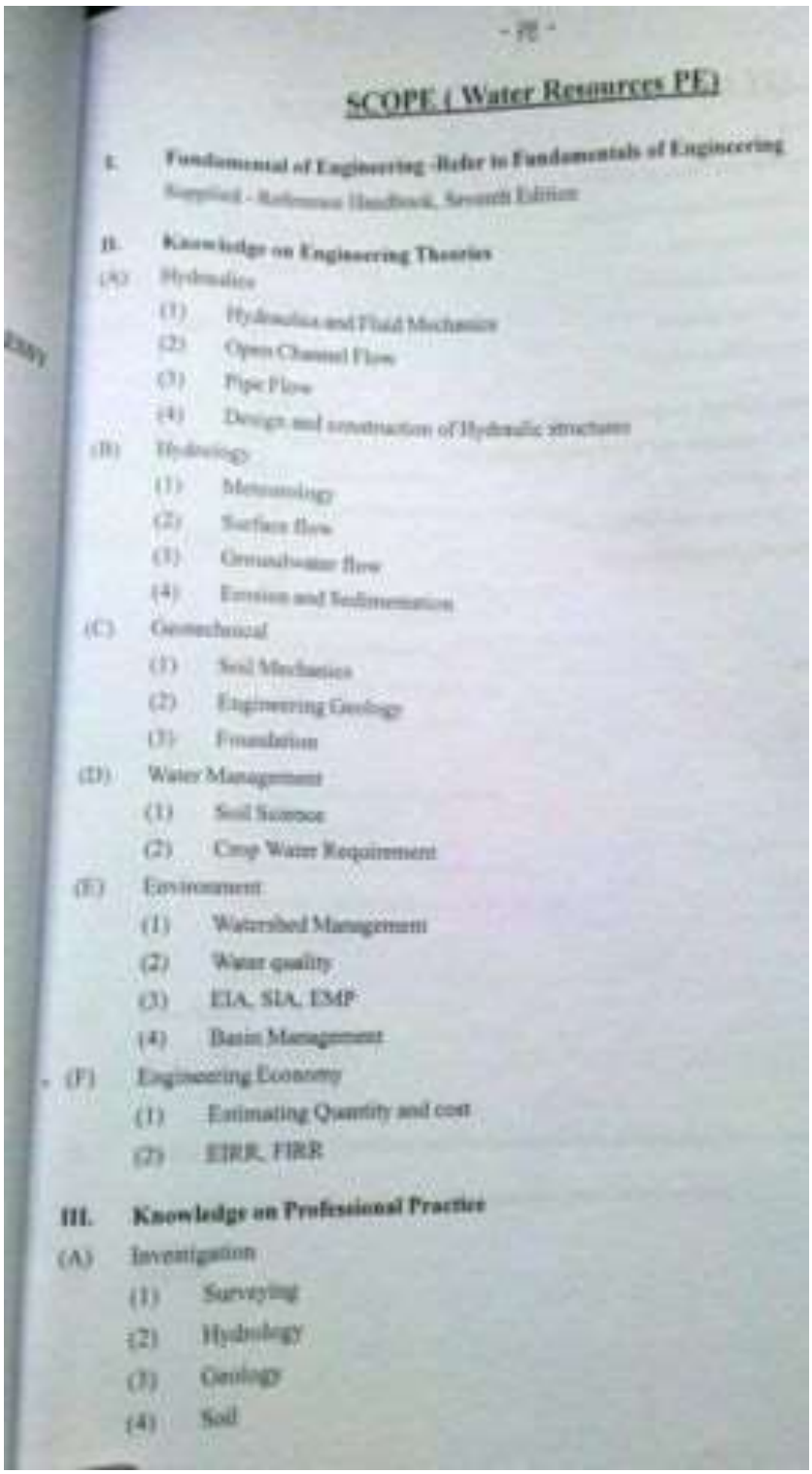
- Shrinkage and Bulking
  - Shrinkage
  - Bulking
- Using the Mass Diagram

Reference Textbook

1-ALL-IN-ONE Civil Engineering P.E. Breadth and Depth-Exam Guide. INDRANIL GOSWAMI
2-Foundation Design and Construction , M J Tomlinson
3-Soil Mechanics , R F Craig
4- Fundamentals of Engineering Review Books
5- Foundation Engineering by Joseph E. Bowles



- PE -

SCOPE (Water Resources PE)

I. **Fundamental of Engineering -Refer to Fundamentals of Engineering Supplied - Reference Handbook, Seventh Edition**

II. **Knowledge on Engineering Theories**

(A) Hydraulics
- (1) Hydraulics and Fluid Mechanics
- (2) Open Channel Flow
- (3) Pipe Flow
- (4) Design and construction of Hydraulic structures

(B) Hydrology
- (1) Meteorology
- (2) Surface flow
- (3) Groundwater flow
- (4) Erosion and Sedimentation

(C) Geotechnical
- (1) Soil Mechanics
- (2) Engineering Geology
- (3) Foundation

(D) Water Management
- (1) Soil Science
- (2) Crop Water Requirement

(E) Environment
- (1) Watershed Management
- (2) Water quality
- (3) EIA, SIA, EMP
- (4) Basin Management

(F) Engineering Economy
- (1) Estimating Quantity and cost
- (2) EIRR, FIRR

III. **Knowledge on Professional Practice**

(A) Investigation
- (1) Surveying
- (2) Hydrology
- (3) Geology
- (4) Soil

(B) Design

(1) Design Criteria and practice

(C) Construction

(1) Construction Management

(D) Quality control and Quality Assuring

(1) Field investigation

(2) Laboratory experience

(E) Operation and Maintenance

(1) Rules and Regulation

IV. Codes, Laws, Bylaws, Regulation, Acts

(1) Water Resources and River conservation Law

(2) Environmental law

(3) Land Revenue and Fishery Law

(4) Canal and Embankment Act

SCOPE (Water Supply and Sanitation PE)

I. **Water Supply**

(A) Water Treatment
1. Water Quality
2. Treatment Process
3. Treated water quality

(B) Water Supply
1. Source
2. Population
3. Water demand
4. Water distribution system
5. Pipe, Fitting and machinery specifications

(C) Plumbing Works
1. Storage
2. Loading unit & design flow
3. Hot water supply system
4. Cold water supply system
5. Peovention of recontamination

(D) Sanitation
1. Building sewer / drainage system
2. Collection system
3. Quantity and quality of waste water
4. Treatment system both on site & off site
5. Effluent quality
6. Disposal

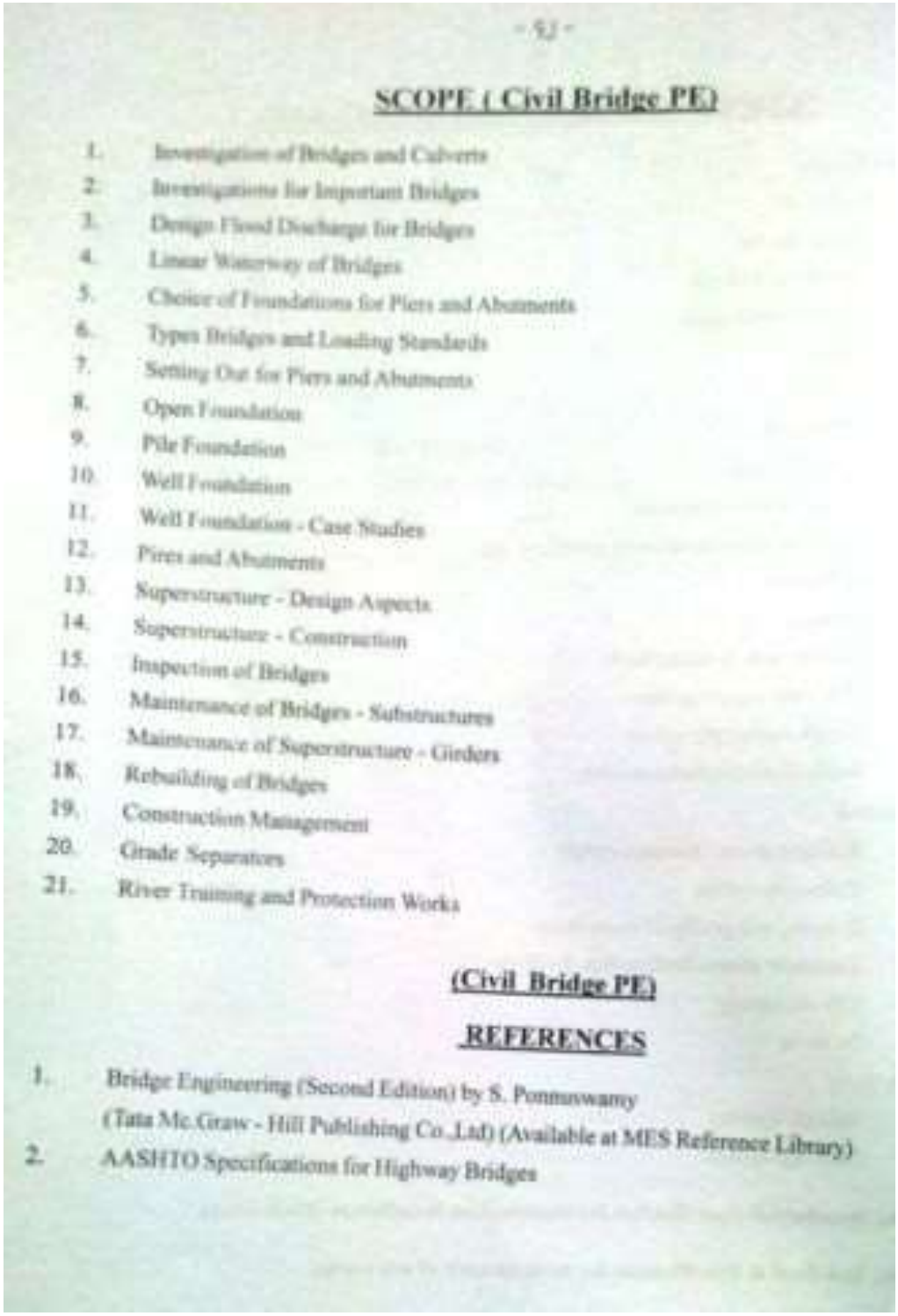
(E) Rain Water
1. Run off quantity
2. Drainage system

II. **Code, Standard & Specification for construction installation of w/s works**

III. **Code, Standard & Specification for maintenance of w/s works**

IV. **Ethics**

Bridge PE



SCOPE (Civil Bridge PE)

1. Investigation of Bridges and Culverts
2. Investigations for Important Bridges
3. Design Flood Discharge for Bridges
4. Linear Waterway of Bridges
5. Choice of Foundations for Piers and Abutments
6. Types Bridges and Loading Standards
7. Setting Out for Piers and Abutments
8. Open Foundation
9. Pile Foundation
10. Well Foundation
11. Well Foundation - Case Studies
12. Piers and Abutments
13. Superstructure - Design Aspects
14. Superstructure - Construction
15. Inspection of Bridges
16. Maintenance of Bridges - Substructures
17. Maintenance of Superstructure - Girders
18. Rebuilding of Bridges
19. Construction Management
20. Grade Separators
21. River Training and Protection Works

(Civil Bridge PE)

REFERENCES

1. Bridge Engineering (Second Edition) by S. Ponnuswamy
(Tata Mc.Graw - Hill Publishing Co .Ltd) (Available at MES Reference Library)
2. AASHTO Specifications for Highway Bridges

ELECTRICAL ENGINEERING

Part 2 -General Electrical Engineering (Reference: Singapore Professional Engineers Board)

Course 2- General Electrical Engineering-Power

EE 101 Principles of Power Engineering

 Three-phase Circuits and Systems

Review of single-phase circuits. Three-phase voltage generation. Phasor diagrams. Wye and delta connections. Balanced three-phase loads. Active, reactive and apparent power. Power measurements. Power factor correction.

 Magnetism and Magnetic Circuits

Magnetic fields. Magnetic materials and magnetization curves. Magnetic equivalent circuits. Electromagnetic induction. Sinusoidal excitation. Magnetic losses.

 Transformers

Ideal transformer. Equivalent circuits. Phasor diagrams. Determination of parameters. Performance evaluation. Autotransformers. Three-phase transformers.

 AC and DC Machines

DC Machines: operating principle, voltage and torque equations, classification, torque-speed characteristics, losses and efficiency. Three-phase induction motors: operating principle, equivalent circuit, torque-speed characteristics, losses and efficiency.

 Power Electronics and Drives

Introduction to power conversion. Harmonics. AC to DC conversion. DC to DC conversion. DC to AC conversion. DC servo motor drive systems. AC variable-speed induction motor drive systems. Permanent magnet and stepping motor drive systems.

Fundamental of Power System

Energy sources. Per unit system. Power system components and representation: synchronous generators, transmission lines and cables. Load representations. Power transfer.

 Power Flow Modelling

System components modelling. Formulation of power flow equations. Methods of power flow solution. Case studies.

 EE 201 Power System Analysis and Utilizations

 Active Power and Frequency Control

Governor control systems. Area control errors and load frequency control. Energy offers. Transmission losses, penalty factors and loss coefficients. Economic dispatch. Automatic generation control. Electricity market environment. Active power control devices.

 Reactive Power and Voltage Control

Production and absorption of reactive power. Methods of voltage control. Reactive power and voltage control devices. Application to transmission and distribution systems.

 Analysis of Unsymmetrical Faults

Three-phase faults and fault level calculations. Symmetrical components. Sequence impedances and sequence networks. Unsymmetrical faults.

 Electric Power Distribution Systems

Distribution system configurations. Primary and secondary distribution. Ring, radial and inter-connected systems. Distribution substation layout. Planning criteria and network design. Fault diagnosis and restoration of supply. Expert system applications.

Course 3-General Electrical Engineering-Building Services

 Building Services Engineering

Estimation of power demand. LV cables and busway systems. Conductor sizing factors. Circuit protective conductor. Earth leakage and touch voltage. Inspection and testing. Lightning protection.

 General Protection Principles

Basic protection principles Instrument transformers. Coordination of overcurrent and earth protection for distribution systems. Pilot-wire differential protection of feeders.

 Applications of High-voltage Engineering

Acceptance and routine tests on apparatus. Fault locating methods.

Condition monitoring and aging assessment. Case studies.

Part 3- Electrical Engineering Practice

Course 4 Electrical Engineering Practice Rues & Regulations

Myanmar Electrical Rules relevant to the followings

syllabus

 Codes of Practice

 CP 5: Code of Practice for Electrical Installations

 CP 10: Installation and Servicing of Electrical Fire Alarm System

 CP 15: Installation, Operation and Maintenance of Escalators

 CP 39: Installation of MATV for the reception of VHF and UHF

Sound and TV

 CP 88 - 1 : Code of practice for temporary electrical installations

- Construction and building sites

 CP 88 - 2 : Code of practice for temporary electrical installations

- Festive lighting, trade-fairs, mini-fairs and exhibition sites

 CP 88 - 3 : Code of practice for temporary electrical installations

- Shipbuilding and ship-repairing yards

SS 209: Battery operated emergency power supply for lighting,

ventilation and alarm bell of lifts

 SS 530: Code of practice for energy efficiency standard for

building services and equipment.

 SS531-1: Code of practice for lighting of work places – Indoor.

 SS531-2: Code of practice for lighting of work places – Outdoor.

 SS531-3: Code of practice for lighting of work places - Lighting

requirements for safety and security of outdoor work places.

 SS532: Code of practice for the Storage of Flammable Liquids.

 SS535: Installation, Operation, Maintenance, Performance and

Construction Requirements of Mains Failure and Standby

Generating System.

 SS538: Code of practice for maintenance of electrical equipment of electrical installations.

 SS546: Emergency voice communication system in building.

 SS 550: Installation, Operation and Maintenance of Electric Passengers and Goods Lifts.

 SS 551: Code of Practice for Earthing.

 SS 555-1 : Code of practice for protection against lightning – General requirement.

 SS 555-2 : Code of practice for protection against lightning – Risk management.

 SS 555-3 : Code of practice for protection against lightning – Physical damage to structures and life hazard.

 SS 555-4 : Code of practice for protection against lightning – Electrical and electronic systems within structures.

 SS 558: Code of practice for construction, installation, operation and maintenance of intruder alarm systems.

 SS 563-1: Code of practice for the design, installation and maintenance of emergency lighting and power supply systems in buildings. Part 1 : Emergency lighting.

 SS 563-2: Code of practice for the design, installation and maintenance of emergency lighting and power supply systems in buildings. Part 2 : Installation requirements and maintenance procedures.

 SS 564 - 1 : Green data centres - Part 1 : Energy and environmental management systems

 SS 564 - 2 : Green data centres - Part 2 : Guidance for energy and environmental management systems

 SS 576: Code of practice for earthworks in the vicinity of electricity cables.

 Electricity Act

 Electricity (Electrical Installations) Regulations

 Handbook for Application of Installation Licence, published by EMA

 Fire Code 2013 & Fire Code 2013 Handbook

Course 5 Electrical Engineering Practice –Green Energy

 BCA Green Mark Assessment Criteria published by BCA

 Code on Accessibility in the Built Environment 2013 published by BCA

 Handbook for solar photovoltaic system (PV) Systems, published by BCA and EMA

Course 6 Electrical Engineering Practice –Electricity Market

 How to Apply for Electricity Connection, published by SP PowerGrid Ltd

 Code of Practice for Info-communication Facilities in Buildings (2013) or COPIF 2013 published by IDA

 Electrical Power Supplies, Tariffs and Design

 Electricity market

 Generation, transmission and distribution in Singapore

 Electricity bill calculation for HT and LT consumers

 Design of electrical installations

 Load estimation

 Power factor correction

Power quality and power system harmonics

 Consumer Substation, Switchboards and Switchgears

 Maintenance of electrical equipment, switchgears and cables

 Design for energy efficiency and sustainability

 Lighting requirement for workplace, indoor and outdoor

 Visual needs for safety and security

 Determine the lighting requirements for indoor and outdoor work

places.

- Energy efficiency and accessibility requirement for buildings
- Minimum energy-efficiency requirements for new installation and replacement of systems and equipment in buildings
- Replacement of components of systems and equipment in buildings
- Criteria for determining compliance with energy efficiency in building with regards to air-conditioning and heat rejection equipment, water heaters, motor drives and lighting used in buildings.
- Requirement and guidelines for buildings to be designed or retrofitted to provide accessibility and safety to persons with disabilities and families with young children.

Course 7 Electrical Engineering Practice –Protection & Safety

- Protection for Safety
- Measures in protection against electric shock (direct and indirect)
- Principle of operation of protective devices
- Maximum demand and diversity factors
- Protection against over-current and short circuits
- Protective devices and circuit conductors
- Discrimination in protection of electrical circuits
- Cables, Busways, and Distribution Boards
- Type and characteristic of cables

Method of installation

- Sizing of conduit and trunking
- Factors affecting the current carrying capacity of cables
- Sizing of cables and busways for use under different types of conditions
- Connected load, maximum demands and circuit breakers ratings for a electrical distribution board
- Earthing

- Purpose of earthing
- Methods of earthing
- Earth fault loop impedance and earth fault current
- Suitable sizes of circuit protective conductor
- Testing of earthing
- Lightning Protection Systems
- Rolling sphere technique of determining zones of protection
- Spacing of air terminations and types of air termination
- Down conductors for building below 45 metres and those exceeding 45 metres
- Earth electrodes, earth resistance values and hazards of a rise in ground potential caused by lightning strike
- Selection of appropriate materials and installation methods
- Prevention of side flashing
- Design requirement of complete lightning protection system
- Transients and surge suppression
- Effect of lightning on system and structure
- Source and type of damages due to lightning

Risk assessment aspect in lightning protection

- Emergency Lighting
- Exit and emergency lighting requirements for evacuation of occupants
- Types of back-up power supplies
- Exit and directional Signs
- Standby Power Generator System
- Types of essential and critical loads
- Sizing of generator with considerations for maximum demand of essential load, transient or motor starting loads and voltage dip
- Voltage regulation and its effects on generator sizing
- Protection for alternator and prime mover
- Installation of standby generator system including day-tank,

battery and charger, fuel supply, engine cooling system, plant room ventilation, exhaust and fresh air intake, control and instrumentation panel and automatic transfer switch.

- Underground fuel storage system
- Grounding/Earthing arrangement
- Maintenance
- Automatic Fire Alarm System
- Requirement for automatic and manual fire detection system and purpose of compartmentation as required by the Fire Code
- Interaction with other building services such as emergency voice communication system, lifts, AHUs, pressurization fans and auto-doors during alarm activation
- Emergency Voice Communication System
- Requirements for public address system for building above 24 metres but less than 60 metres
- Requirements for emergency voice communication for building above 60 metres

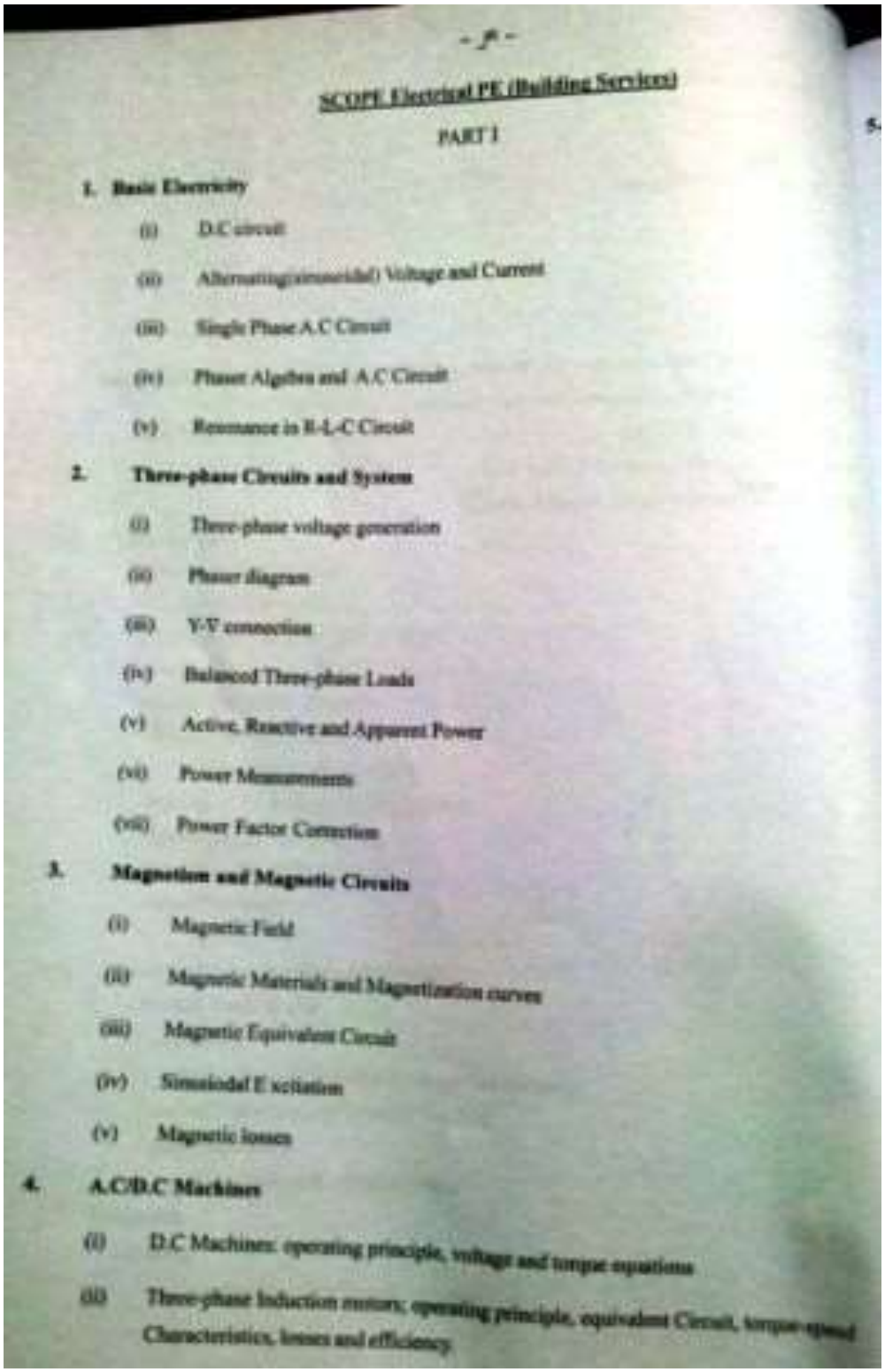
Requirements for fireman intercom

- Inspection, Testing and Common Violation In Electrical Installation
- Mandatory requirements for inspection and testing of electrical installation prior to energisation of electrical supply
- Types of test instruments and standard methods of testing

Part 4-Specialist Area----------RSE Theory Part (Reference: Myanmar Board of Engineers)

RSE are required to demonstrate all or part of the topics in their specialist practice area. The demonstration is by means of various ways as described in the RSE assessment part of the flow chart

Building Services (030-036)



- 5 -

SCOPE Electrical PE (Building Services)

PART I

1. Basic Electricity

(i) D.C circuit

(ii) Alternating(sinusoidal) Voltage and Current

(iii) Single Phase A.C Circuit

(iv) Phasor Algebra and A.C Circuit

(v) Resonance in R-L-C Circuit

2. Three-phase Circuits and System

(i) Three-phase voltage generation

(ii) Phasor diagram

(iii) Y-Y connection

(iv) Balanced Three-phase Loads

(v) Active, Reactive and Apparent Power

(vi) Power Measurements

(vii) Power Factor Correction

3. Magnetism and Magnetic Circuits

(i) Magnetic Field

(ii) Magnetic Materials and Magnetization curves

(iii) Magnetic Equivalent Circuit

(iv) Sinusoidal Excitation

(v) Magnetic losses

4. A.C/D.C Machines

(i) D.C Machines: operating principle, voltage and torque equations

(ii) Three-phase Induction motors; operating principle, equivalent Circuit, torque-speed Characteristics, losses and efficiency

- 2 -

5. **Transformers**

(i) Ideal Transformer

(ii) Equivalent circuit

(iii) Phasor Diagrams

(iv) Determination of Parameters

(v) Performance Evaluation

(vi) Auto-transformers

(vii) Three-phase Transformers

6. **Active Power and Frequency Control**

(i) Governor Control Systems

(ii) Transmission Losses, penalty factors and loss coefficients

(iii) Automatic Generation Control

(iv) Active power Control Devices

7. **Reactive Power and Frequency Control**

(i) Production and Absorption of Reactive Power

(ii) Methods of Voltage Control

(iii) Reactive Power and Voltage Control Devices

(iv) Application to Transmission and Distribution systems

8. **Electric Power Distribution Systems**

(i) Distribution System Configuration

(ii) Primary and Secondary Distribution

(iii) Ring, Radial and Inter-connected Systems

(iv) Distribution Substation Layout

(v) Planning Criteria and Network Design

9. **Building Services Engineering**

   (i) Estimation of Power Demand

   (ii) L.V Cables and Bus-way Systems

   (iii) Conductor Sizing Factors

   (iv) Circuit Protective Conductor

   (v) Earth Leakage and Touch Voltage

   (vi) Inspection and Testing

   (vii) Lightning Protection

10. **General Protection Principles**

   (i) Basic Protection Principles

   (ii) Instrument Transformers

   (iii) Coordination of Over-current and Earth Protection for Distribution Systems

   (iv) Pilot-wire Differential Protection of Feeder

SCOPE Electrical PE (Building Services)

PART II

1. **Electrical Power Supply**
   - (i) Generation, Transmission, and Distribution
   - (ii) Application of Electricity
   - (iii) Solar Photo-voltaic Systems
   - (iv) Design of Electrical Installations
   - (v) Load Estimation
   - (vi) Power Factor correction
   - (vii) Power Quality and Power system harmonics
   - (viii) Consumer and Substation, Switchboards and Switchgear
   - (ix) Maintenance of Electrical Equipment, Switchgear and Cables
   - (x) Design of Energy Efficiency and Sustainability
2. **Lighting Requirement for Workplace, Indoor, and Outdoor**
   - (i) **Visual Needs for Safety and Security**
   - (ii) **Determine the Lighting Requirements for Indoor and Outdoor Workplaces**
3. **Energy Efficiency Requirement**
   - (i) **Minimum Energy-Efficiency Requirements for New Installation and Replacement of Systems and Equipment in Buildings**
   - (ii) **Replacement of Components of Systems and Equipment in Buildings**
   - (iii) **Criteria for Determining Compliance with Energy Efficiency in Building with Regards to Air conditioning and Heat Rejection Equipment, Water Heaters, Motor Drives and Lighting used in Buildings**
4. **Protection for Safety**
   - (i) **Principle of Operation of Protective Devices**
   - (ii) **Maximum Demand and Diversity Factors**

(iii) Protection Against Over-current and Short Circuits

(iv) Protective Devices and Circuit Conductors

(v) Discrimination in Protection of Electrical Circuits

5. Cables, Bus-ways and Distribution Boards

(i) Type and Characteristic of Cables

(ii) Method of Installation

(iii) Sizing of Conduit and Trunking

(iv) Factors Affecting the current Carrying Capacities of Cables

(v) Sizing of Cables and Bus-ways for use Under Different Types of Conditions

(vi) Connected Load, Maximum Demand and Circuit Breakers Ratings For a Electrical Distribution Board

6. Earthing

(i) Purpose of Earthing

(ii) Methods of Earthing

(iii) Earth Fault Loop Impedance and Earth Fault Current

(iv) Suitable Sizes of Circuit Protective Conductor

(v) Testing of Earthing

7. Emergency Lighting

(i) Exit and Emergency Lighting Requirements for Evaluation of Occupants

(ii) Types of Back-up Power Supply

(iii) Exit and Directional Signs

8. Standby Power Generator System

(i) Types of Essential and Critical Loads

(ii) Sizing of Generator

(iii) Voltage Regulation and its Effects on Generator Sizing

(iv) Protection of Alternator and Prime Movers

(v) Installation of Standby Generator System including Day-tank, Battery and charger Fuel supply, Engine cooling system, plant room ventilation, exhaust and fresh air intake, control instrumentation panel and automatic transfer switch.

9. Automatic Fire Alarm System

(i) Requirement for automatic and manual fire detection system and purpose of compartmentation as required by the fire code

(ii) Interaction with other building services such as emergency voice communication system, lifts, AHU, pressurization fans and auto-doors during alarm activation

10. Emergency Voice Communication System

(i) Requirements for public address system for building above 24 meters but less than 60 meters.

(ii) Requirements for emergency voice communication for building above 60 meters

(iii) Requirements for fireman intercom

11. Inspection, Testing, and Common Violation in Electrical Installation

(i) Mandatory requirements for inspection and testing of electrical prior to energization of electrical supply

(ii) Types of test instruments and standard methods of testing

12. Measuring Instruments

(i) Principle of operation of Electrical Measuring Instruments

(ii) Essential of Indicating Instruments

(iii) Types of Instruments

(iv) Errors Common to All Types of Instruments

(v) Moving Iron Instruments

(vi) Moving Coil Instruments

(vii) Comparison Between Moving Iron and Moving Coil Instruments

(viii) Comparison Between Moving Iron and Dynamometer Type Instruments

(ix) Extension of Instrument Range

(x) Measurement of power

(xi) Wattmeter, Dynamometer Type Wattmeter

(xii) Energy Meter, Multimeter or AVO meter, Electronic Multimeter,

(xiii) Digital Multimeter

13. Electrical Engineering Codes/Standards

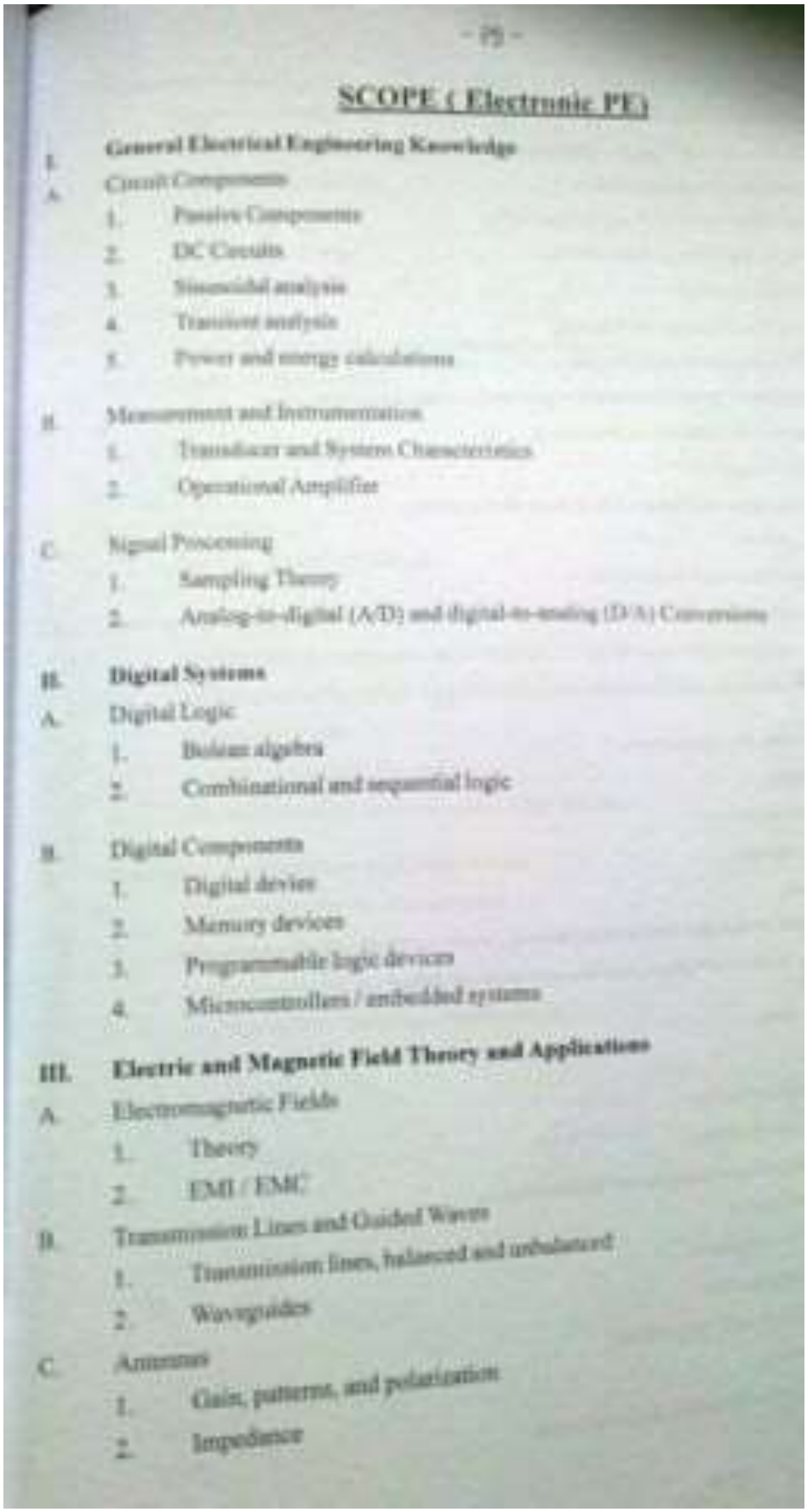
(i) Codes, standards and Regulations

(ii) Codes and standards for building services.

REFERENCES

1. Basic Electrical & Electronics engineering by J.B GUPTA
2. Electrical Installation Calculations (advanced) by A.J Watkins Charis Kitcher
3. Practice of professional engineering Examination 2012 (Professional Engineering Board Singapore)
4. Code of Practice for "Protection against Lightning" Singapore Standard SS555
5. Code of Practice for Electrical Installations CP 5 Singapore Standard
6. IEC Regulation, Electrical Building Services
7. IEE Wiring Regulations

ELECTRONIC



- P9 -

SCOPE (Electronic PE)

I. **General Electrical Engineering Knowledge**

A. Circuit Components

1. Passive Components
2. DC Circuits
3. Sinusoidal analysis
4. Transient analysis
5. Power and energy calculations

B. Measurement and Instrumentation

1. Transducer and System Characteristics
2. Operational Amplifier

C. Signal Processing

1. Sampling Theory
2. Analog-to-digital (A/D) and digital-to-analog (D/A) Conversions

II. **Digital Systems**

A. Digital Logic

1. Boolean algebra
2. Combinational and sequential logic

B. Digital Components

1. Digital device
2. Memory devices
3. Programmable logic devices
4. Microcontrollers / embedded systems

III. **Electric and Magnetic Field Theory and Applications**

A. Electromagnetic Fields

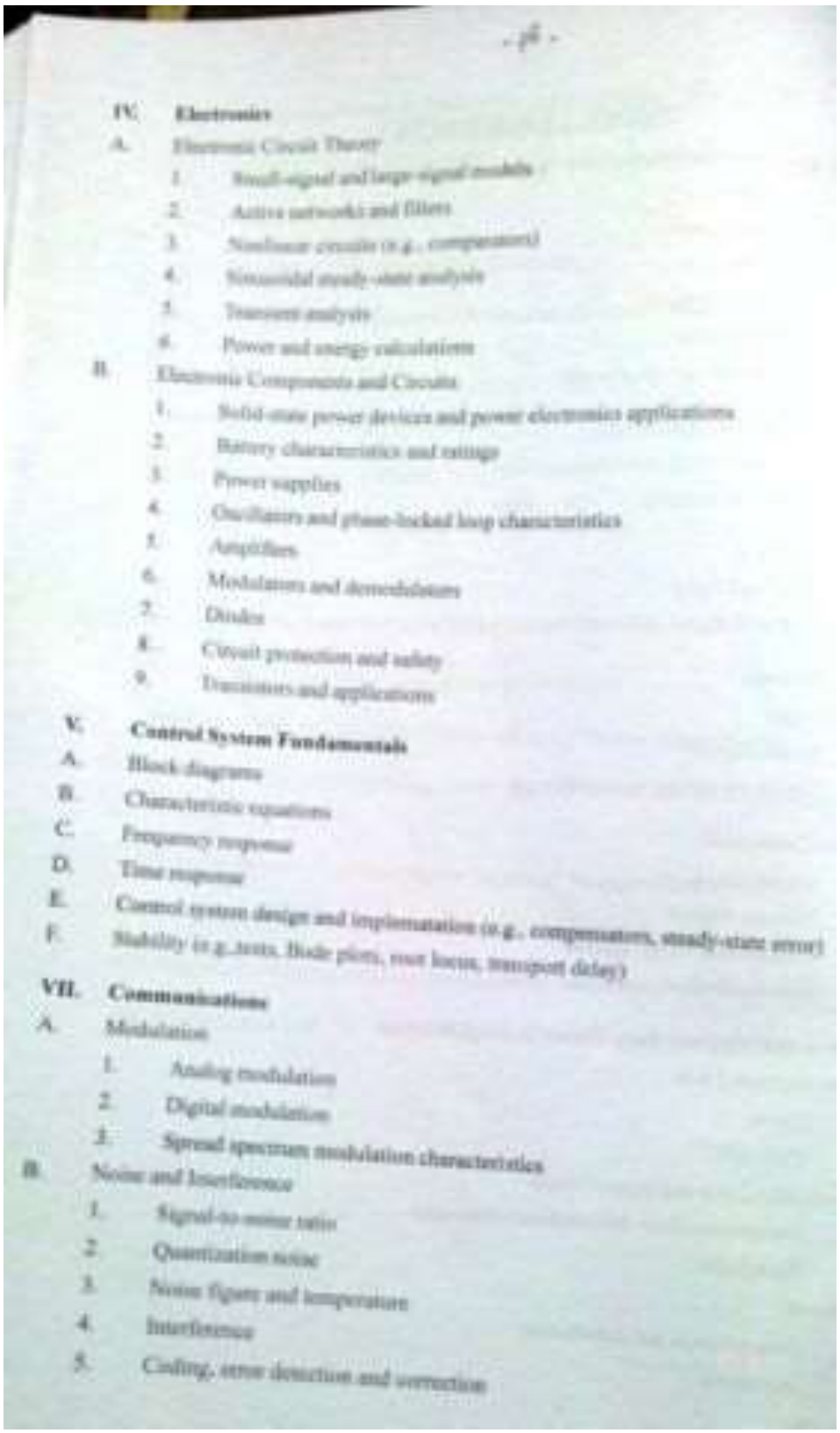
1. Theory
2. EMI / EMC

B. Transmission Lines and Guided Waves

1. Transmission lines, balanced and unbalanced
2. Waveguides

C. Antennas

1. Gain, patterns, and polarization
2. Impedance



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IV. **Electronics**

A. Electronic Circuit Theory
   1. Small-signal and large-signal models
   2. Active networks and filters
   3. Nonlinear circuits (e.g., comparators)
   4. Sinusoidal steady-state analysis
   5. Transient analysis
   6. Power and energy calculations

B. Electronic Components and Circuits
   1. Solid-state power devices and power electronics applications
   2. Battery characteristics and ratings
   3. Power supplies
   4. Oscillators and phase-locked loop characteristics
   5. Amplifiers
   6. Modulators and demodulators
   7. Diodes
   8. Circuit protection and safety
   9. Transistors and applications

V. **Control System Fundamentals**

A. Block diagrams
B. Characteristic equations
C. Frequency response
D. Time response
E. Control system design and implementation (e.g., compensators, steady-state error)
F. Stability (e.g., tests, Bode plots, root locus, transport delay)

VII. **Communications**

A. Modulation
   1. Analog modulation
   2. Digital modulation
   3. Spread spectrum modulation characteristics

B. Noise and Interference
   1. Signal-to-noise ratio
   2. Quantization noise
   3. Noise figure and temperature
   4. Interference
   5. Coding, error detection and correction

C. Telecommunications

1. Wireline communications
2. Wireless communications
3. Optical communications
4. Multiplexing
5. Traffic and switching

VIII. Programming

1. Overview of Computer and Computer System
2. C and C++ fundamentals
3. Branching
4. Looping
5. Files
6. Functions
7. Pointers, Arrays and Strings

IX. Microprocessor System

1. Introduction to Microprocessor System
2. Architecture of the 8088/ 8086 Microprocessor
3. Addressing Modes
4. Assembly Language Programming
5. The architecture of Intel microprocessor families

X. Computer Architecture and Engineering

1. Classic components of a computer
2. Measuring Performance
3. Major factors for performance of a computer
4. MIPS assembly Language Programming

MECHANICAL

Part 2-General Mechanical Engineering-(Reference: Singapore Professional Engineers Board)

Course 2- General Mechanical Engineering- Control And Instrumentations

ME 101/201 Control And Instrumentations

 Modelling of Linear Systems

Introduction to control systems. Mathematical modelling of electro-mechanical systems. Transfer functions representation of physical components. Block diagram manipulation.

 Dynamic Response Analysis

Transient response analysis and performance indices. Poles and zeros concept, dominant pole concept of high order systems. Characteristic equation. Steady state errors and system types.

 Principles of Feedback Control

Open loop versus closed loop control. Analysis of system type. Error elimination and disturbance rejection. Types of feedback systems. PID controller. Stability and Routh-Hurwitz method.

 Root Locus Techniques

Qualitative analysis of the Root Locus. Guidelines for sketching a Root Locus. General concepts of dynamics compensator design. Design by Root Locus: PI, PD, PID, Lead and Lag compensators. Feedback compensation and realisation.

 Frequency Domain Analysis

Concept of frequency response. Bode plots. Nyquist plot and Nyquist stability criterion. Stability margins. Closed loop frequency domain characteristics. Design of compensator via Bode plots - Lead, Lag & Lag-lead controller. Design examples.

 Measurement System

Models and classification for measurement systems and their time and frequency domain behaviours. Performance specifications.

 Analog Devices and Measurement

Introduction to basic measurement devices for analog signals and

measurement principles. Conditioning of analog signals for transmission and processing.

 Digital Devices and Measurement

Fundamental differences between analog and digital systems. Sampling theorem and fundamentals of data acquisition.

 Sensors

Measurement for common engineering applications: position, speed, stress, strain, temperature, vibration and acceleration, pressure and flow. Semiconductor sensors and micromechanical devices.

 ME 102/202 Dynamics And Vibrations

 Dynamics

Kinematics of Particle

Uniform rectilinear motion; Uniform accelerated rectilinear motion; Rectangular components of velocity and acceleration; Motion relative to a frame in translation; Tangential and normal components; Radial and transverse components. Newton's second law; Equations of motion; Angular momentum of a particle; Principle of conservation of energy; Principle of conservation of momentum.

Kinematics of Rigid Bodies

General plane motion; Coriolis acceleration. Equations of plane motion for a rigid body; Angular momentum of a rigid body in plane motion; Principle of work and energy for a rigid body; Principle of impulse and momentum for the plane motion of a rigid body; Conservation of angular momentum.

 Mechanical Vibrations

Vibration Without Damping

Simple harmonic motion; Energy method; forced vibration.

Damped Vibration

Damped free vibration; Damped forced vibration.

Course 3- General Mechanical Engineering- Mechanics

- ME 103/203 Fluid Mechanics
- Basic concepts

Understanding fluids as compared to solids and gases. Properties of fluids: Density, pressure and viscosity. Pressure measurements. Buoyant forces and Archimedes' Principle. Stability of submerged and floating bodies. Stability of a ship.

- Fluid Motion

Real and ideal fluids. Momentum and forces in fluid flow: Continuity equation, momentum equation, energy equation, Bernoulli's equation.

- Pipe Flow

Laminar and turbulent flows in pipes. Moody diagram, losses and fittings, energy equation for real laminar flow in pipes. Equation of motion for turbulent flow. Mixing length hypothesis. Fully turbulent flow in pipes. Head and flow calculations in pump-piping systems.

- Fluid Machinery

Fundamental theory and performance. Pumps and fans, turbines: Concepts and performance characteristics. Cavitation and surge phenomena.

- Flow Resistance and Propulsion

Boundary layer, surface roughness, form drag. Water jet theory: Basic principle, fundamental thrust equation. Ship propulsion: Introduction to propulsion system, powering of ship, propeller theory, propeller-hull interaction.

- ME 104/204 Mechanics And Materials
- Material properties and behaviour

Yield and ultimate tensile stress, proof stress, elastic modulus. Yield and Strength failure criteria- Tresca and Von-Mises.

Temperature effects- temperature expansion coefficient, creep and stress relaxation. Post-yield effects- elastic-plastic, bilinear hardening and strain hardening. Fatigue effects- S/N curves.

 Stress and Strain

Basic stress and strain for elastic bodies- direct stress and strain, shear stress and strain, Mohr's circle. Stress and Strain transformations - two and three-dimensional, 4 elastic constants E, , k and G.

 Bending of beams

Second moments of area of structural sections, Free body, shear force and bending moment diagrams. Elastic and inelastic bending of beams. Combined tension and bending of beams, Deflection and slopes of beams. Shear stress in beams, Statically indeterminate beams.

 Bending of plates and cylindrical shells

Symmetric membrane bending theory of circular plates and shells under fixed and freely supported boundaries. Discontinuity stresses of cylinder to flat, cone or hemispherical shells junctions.

 Torsion of prismatic bars and closed sections

Torsion of circular solid section and open thin walled sections, shear stresses and deformation, shear flow in thin walled open and closed sections.

 Buckling of columns

Euler buckling theory, perfect and imperfect columns, effect of end fixings on critical buckling loads.

 Thermal loading

Thermal stresses in beams and cylinders due to a through thickness temperature gradient, thermal stresses in compound bars of different materials under uniform temperature.

 Internal pressure loading

Membrane theory, thin and thick walled cylinders under pressure.

Course 4- General Mechanical Engineering- Manufacturing

 ME 105/205 Manufacturing Technology

 Introduction

Cutting tool materials. Single and multi-point tools. Types of wear. Manufacturing processes: cold and hot working, rolling, extrusion, forging, sheet and metal blanking and forming, cold forming, welding, brazing, soldering, casting, powder metallurgy, plastics technology. Non-conventional machining: electro-discharge machining.

 Metal Removal

Introduction to machine tools and machining operations – Generating motions of machine tools, machines using single point tools, machines using multipoint tools, machines using abrasive wheels. Mechanics of metal cutting – Chip formation, forces acting on the cutting tool and their measurement, the apparent mean shear strength of the work material, chip thickness, friction in metal cutting. Cutting tool materials – Major tool material types. Tool life and tool wear – Forms of wear in metal cutting. Economics of metal cutting operations – Choice of feed, speed and depth of cut, tool life for minimum cost and minimum production time, estimation of factors needed to determine optimum conditions.

 Metrology

Basic measuring instruments and their applications (Linear and angular measurement, roundness, flatness and surface finish measurement).

 Manufacturing Processes

Introduction to cold and hot working. Rolling - 2, 3 and 4-high rolls, cluster and planetary rolls, manufacture of blooms, billets and slabs. Extrusion - Direct and indirect extrusion, hollow extrusion, hydrostatic extrusion. Forging - Hammer, press, roll forging, open and closed die forging. Sheet metal bending and deep-drawing, punch load, drawability, Crane's constants. Shearing of sheet metal - types of shearing operation, punch and die clearance, punch force. Cold forming processes - Marforming, Guerin process, hydroforming. Welding, brazing, soldering - Arc and gas welding, pressure welding,

MIG, TIG, submerged-arc, friction, resistance, laser and electron-beam welding. Casting - Sand casting, patterns, defects, die-casting, centrifugal casting, investment casting, continuous casting. Powder metallurgy - Production of powders, fabrication processes, sintering, comparison with other processes. Electro-discharge machining. Plastics technology – Properties of plastics, thermoplastics and thermosets, manufacturing of plastics.

Course 5- General Mechanical Engineering- Heat Transfer

 ME 106/206 Thermodynamics And Heat Transfer

 Thermodynamics

Fundamental concepts

Simple concept of thermodynamic system. Types of energy interaction between system and surroundings. Properties of simple pure substances –understand the general form of property diagrams. Empirical temperature scales and thermometry. Ideal and perfect gases. Use of steam tables for substance such as water.

First Law of Thermodynamics

The concept of fully-resisted or quasi-static processes; work and heat interactions in adiabatic boundaries with the introduction of internal energy, kinetic, potential and enthalpy. Statement of the First law of Thermodynamics: applications relating to non-flow and simple unsteady flow (e.g., the filing of a rigid vessel) processes. First law applied to simple thermodynamic plants, e.g. power plant, compressors and expanders (without detailed knowledge of plant construction). Steady flow energy equation and its application to demonstrate the significant of enthalpy changes.

Second Law of Thermodynamics

Alternative statements of the Second Law. Reversible and irreversible processes. Internal and external irreversibility. Heat

engines operating in temperature reservoirs and the efficiency of reversible engines. Entropy as a property and its relationship to heat transfer. The Clausius inequality. Isentropic and non-isentropic processes.

 Heat Transfer

Conduction

Heat transfer by conduction. Steady-state conduction through slab, compound walls, cylinders and spheres. Unsteady state conduction in homogeneous solids.

Convection

Heat Transfer by convection, in fluids and films. Overall heat transfer coefficients. Natural and forced convection on plane surfaces, fins, pipes and around round bundles. Heat transfer in extended surfaces- combining conduction and convection.

Radiation

Heat transfer by radiation. Laws of radiant heat transfer, black and gray bodies, geometric factors, absorptivity.

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Part 3 Mechanical Engineering Practice

Course 6- Mechanical Engineering Practice - Piping

Piped Services

Cold and Hot Water Services; Sanitary Plumbing Systems within buildings; Town Gas Incoming Supply and Distribution; Liquefied Petroleum Gas (LPG) Multi-Cylinder Systems; Swimming Pool Filtration System

Course 7- Mechanical Engineering Practice – Air-conditioning & Mechanical Ventilation

 Air Conditioning & Mechanical Ventilation

Indoor Air Quality Comfort / Environmental Control / Fire Safety Requirements

 Fire Safety in Buildings

Wet and Dry Rising mains/Hydrant Systems; Fire Hose reel System;

Automatic Fire Sprinkler System; Fire Detection and Alarm System;

Course 8- Mechanical Engineering Practice – Gas (Optional)

Gas Flooding System

Course 9- Mechanical Engineering Practice – Lift and Hoisting Systems (Optional)

Lift and Hoisting Systems

Lifting / Hoisting Equipment

 Other Major Mechanical Systems and Services

Boiler Plants, Calorifiers, Pressure Vessels, Pressure Piping

Lift and Hoisting Systems

Course 10- Mechanical Engineering Practice – Energy Conservation for Mechanical Building Services (Optional)

 Energy Conservation for Mechanical Building Services /

Part 4-Specialist Area----------RSE Theory Part

RSE are required to demonstrate all or part of the topics in their specialist practice area. The demonstration is by means of various ways as described in the RSE assessment part of the flow chart

Buildings Mechanical Standards

 Relevant Codes of Practices, Standards and Acts

All relevant regulations, by-laws, Acts and accepted codes of practice

of:-

 National Environment Agency

 Public Utilities Board

 PowerGas Ltd

 PowerGrid Ltd

 Singapore Civil Defence Force

 Ministry of Manpower

 Building and Construction Authority

 Energy Market Authority

 Singapore Standards – Codes of Practice

  SS 550: Installation, Operation and Maintenance of Electric

Passengers and Goods Lifts.

 CP 10 : Code of Practice for The Installation and Servicing of Electrical Fire Alarm Systems

 SS553: Code Of Practice For Air-Conditioning And Mechanical **Ventilation In Buildings (Formerly CP13)**

CP 15: Code of Practice for Installation, Operation and Maintenance of Escalators and Passenger Conveyors

 SS530 – Code of Practice for Energy Efficiency Standard for **Building Services and Equipment**

 SS567: Code of Practice for Factory Layout – Safety, Health and Welfare Considerations

 SS575: Code of Practice for Fire Hydrant Systems and Hose Reels

 CP34: Code of Practice for bulk liquid oxygen storage installation on user premises

 CP35: Code of Practice for the selection, care and maintenance of steel wire ropes for hoisting

 SS536: Code of Practice for safe use of mobile cranes

 SS532 – Code of Practice for the Storage of Flammable Liquids

 CP48: Code of Practice for Water Services

 CP51: Code of Practice for Manufactured Gas Pipe Installation

 CP52: Code of Practice for Automatic Fire Sprinkler System

 SS578: Code of Practice for Use and Maintenance of Portable Fire Extinguishers

Cranes

 SS559: Code of Practice for safe use of tower cranes

 CP63: Code of Practice for the lifting of persons in work platforms suspended from cranes

 NFPA 2001: Standard for Clean Agent Fire Extinguishing systems (FM200)

Piping & Pressure Vessel

American Society of Mechanical Engineers codes on pressure

vessels and piping

 American Petroleum Institute codes on pressure vessels and

piping

 British Standards on pressure vessels and piping

NOTE

Although the references from Singapore Board & Singaporean Standards are mentioned, Myanmar Engineering Council Trainers can choose the other relevant standards by consulting with Myanmar Engineering Council

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Graduate Engineer Capstone Assessment (Part 1) Resources

Graduate Engineer Capstone Assessment Part 1 Resources contain the following aspects

- Professional Engineer & Engineering Fundamental Online References
- Handbooks of Engineering Calculations
- Standard Handbooks for practical applications

Teachers from Technological Universities and Trainers/ Assessors of Capstone Training & Assessment can refer any relevant textbooks by consultation with Myanmar Engineering Council.

The following web-links contain the suggested references in electronic format.

Engineering Calculation Download link

TU Teachers should download the Handbook of Engineering Calculations & teach the students to prepare for Capstone Part 1 Engineering Fundamental Knowledge Assessment

www.highlightcomputer.com/peexam.htm

Engineering Calculations

(Electrical+ Civil+ Structural+ Architectural+ Mechanical + Building Services+ Chemical+ Environmental)

1.standard_handbook_of_engineering_calculations

Section 1-Civil Engineering (PDFFile Page 7)

Section 2-Architestural Engineering (PDF File Page 188)

Section 3-Mechanical Engineering (PDF File Page 307)

Section 4-Electrical Engineering (PDF File Page 885)

Section 5-Chemical Process & Plant Engineering (PDF File Page 974)

Section 6- Water & Waste Water Engineering (PDF File Page 1041)

Section 7-Environmental Engineering (PDF File Page 1078)

The calculations are prepared by Professional Engineers in USA& they cover not only academic aspects but also practical application design problems

1.pdf (18.88MB)

www.mongroupsydney1.com/1.pdf

This contains Electrical/Mechanical/Civil/ Structural/Environment/Architectural/Chemical Engineering problems at Engineering Fundamental & the problems are used by various PE boards. It is easier for the examiners to set the questions as well as they can well be referred by lecturers in their teaching

2.Building Services Engineering Spreadsheets

2.pdf (26.28MB)

www.mongroupsydney1.com/2.pdf

This contains Building Service/ Air Con heat flow problems

3.Electrical Engineering formulae & tables

www.mongroupsydney1.com/3.pdf

3.pdf (10.5MB)

4.Mathematics-The Civil Engineering Handbook

www.mongroupsydney1.com/4.pdf

4.pdf (3.87MB)

5.McGraw-Hill_-_Civil_Engineering_Formulas__2002__Tlf

www.mongroupsydney1.com/5.pdf

5.pdf (4.41MB)

6.Mech_Eng_Calculations

www.mongroupsydney1.com/6.pdf

Dynamics

www.mongroupsydney1.com/Dynamics.pdf

6.pdf (262.83MB)
This contains all Mechanical Engineering Calculations

7.Newnes Electrical Power Engineer Handbook

www.mongroupsydney1.com/7.pdf

7.pdf (6.99MB)
8.Newnes_Electrical_Engineers_Handbook

www.mongroupsydney1.com/8.pdf

8.pdf (18.5MB)
http://www.filefactory.com/file/2w3pne09qn5t/n/8.pdf

2011_NCEES_FE_Reference_Handbook.pdf

www.mongroupsydney1.com/2011_NCEES_FE_Reference_Handbook.pdf

Engineering Fundamental FE Exam Supplied Handbook.pdf

www.mongroupsydney1.com/EngineeringFundamentalExamSuppliedHandbook.pdf

public_fe_reference_handbook.pdf

www.mongroupsydney1.com/public_fe_reference_handbook.pdf

Professional Engineer Support Site

This site contains other general references for Practical knowledge. (Not all resources are downloadable from internet. Authorized teachers & trainers are required to meet the course developer)

http://www.highlightcomputer.com/pe.htm

Electrical+ Building Services

www.highlightcomputer.com/PEEE.htm

Electronics
www.highlightcomputer.com/PEEC.htm

Civil

www.highlightcomputer.com/PECivilCombined.htm
Engineering References

http://www.highlightcomputer.com/elib.htm

ENGINEERING FUNDAMENTAL EXAMINATION SUPPORT SITE

www.highlightcomputer.com/ef.htm

PROFESSIONAL ENGINEER EXAMINATION SUPPORT SITE

www.highlightcomputer.com/pesupport.htm

Fundamental of Engineering Overseas Test System General Information

http://www.highlightcomputer.com/ef.htm#a

Fundamental of Engineering Study Areas (Reference to Professional Engineers Board of Singapore)

http://www.highlightcomputer.com/ef.htm#b

Fundamental of Engineering Study Resources

http://www.highlightcomputer.com/ef.htm#c

(Reference to Professional Engineers Board of Singapore)

(Civil)

http://www.highlightcomputer.com/ef.htm#c

http://www.highlightcomputer.com/pecivil.htm

Electrical

http://www.highlightcomputer.com/ef.htm#d

http://www.highlightcomputer.com/pe3.htm

Mechanical

http://www.highlightcomputer.com/ef.htm#e

Marine Engineers & Naval Architect Professional Engineers Test References

http://www.highlightcomputer.com/ef.htm#f

Chemical Engineers Reference

http://www.highlightcomputer.com/ef.htm#h

Petroleum Engineers Reference

http://www.highlightcomputer.com/ef.htm#i

Materials, Metallurgy & Mining Engineers Reference

http://www.highlightcomputer.com/ef.htm#j

Professional Engineer Competency Development

http://www.highlightcomputer.com/GraduateDiplomaEngineeringPractice.htm

Graduate Engineer Capstone Assessment (Part 2)

After having completed the course 1, the followings are the courses and assessment to complete Graduate Capstone Part 2- Practical Training to issue Registered Engineer (Supervised Practice) Licences.

Practical courses are mixture of online/ DVD demonstration videos and hand on practice by using tools and equipment which are to be delivered and assessed by competent trainers. The followings are the list. The graduate engineers are required to complete the specific numbers of practical courses as specified from time to time. (Not all resources are downloadable. Resources in DVD/ USB will be available.

Engineering Practicals Courses

Part (1) Youtube Engineering Practicals

Teachers are trainers should encourage the students to view Youtube Practicals before working with real equipment.

Electrical Engineering

http://www.mongroupsydney1.com/youtubevideos.htm#b

Civil Engineering

http://www.mongroupsydney1.com/youtubevideos.htm#d

Mechanical Engineering

http://www.mongroupsydney1.com/youtubevideos.htm#e

Part (2) Engineering Practicals in DVD/USB/ Download link

Engineering Practicals in the following links are also available in DVD/USB. Teachers and trainers can copy the digitized practical videos and reference books from the Capstone Course Developer. (Not all resources are downloadable from internet. Authorized teachers & trainers are required to meet the course developer)

www.highlightcomputer.com/PracticalCourses.htm

PC-Practical Course

Civil Engineering

PC 1-Certificate in Bricklaying & Masonry

- **Practical Demonstration Videos**

Brick Laying.mp4 (50.88MB)
http://www.filefactory.com/file/4ivd30digpt1/n/Brick_Laying.mp4

Brick laying 2.mp4 (73.23MB)
http://www.filefactory.com/file/civx70pl4af/n/Brick_laying_2.mp4

Brick laying 3.mp4 (3.27MB)
http://www.filefactory.com/file/6fo80awne8l5/n/Brick_laying_3.mp4

Concrete stair building.mp4 (16.16MB)
http://www.filefactory.com/file/5ywcvccduhtt/n/Concrete_stair_building.mp4

Concrete stair building 2.mp4 (84.41MB)
http://www.filefactory.com/file/20vfl1ohzc0n/n/Concrete_stair_building_2.mp4

Concrete stair building 3.mp4 (39.05MB)
http://www.filefactory.com/file/1ulxprqqjx19/n/Concrete_stair_building_3.mp4

Stone veneer column building.mp4 (25.64MB)
http://www.filefactory.com/file/216vowqqvp7f/n/Stone_veneer_column_building.mp4

- **Written Lesson Notes in Myanmar+ English**

http://www.filefactory.com/file/6vx58ad9bg9/n/CE_ME_Part_3_pdf

Page	Contents	Unit Code
10-34	Brick Laying	Building Construction

http://www.filefactory.com/file/tkgrzxydpdl/n/Civil_Engg_Part_1_pdf

Page	Contents	Unit Code
77-100	Bricklaying Fundamental	Civil Engineering

(R776)

http://www.filefactory.com/file/2qd51goi5gzf/n/Civil_Engg_Part_3_pdf

Page	Contents	Unit Code
1-27	Bricklaying	Building Construction

(R777)

http://www.filefactory.com/file/39jhmvbrynap/n/Civil_Engg_Part_4_pdf

Page	Contents	Unit Code
68-100	Bricklaying Operation	Building Construction

- **References**

  http://www.filefactory.com/file/1y3ex0ve3a99/n/GTI_Notes_Part_8_pdf

Page	Contents	Unit Code
39-68	Engineering Materials	Electrical Engineering (GTI)

- **Certificate of Attendance**

Certificate of Attendance in Electronic Format will be issued upon filling & returning the following form

www.highlightcomputer.com/RequestingCertificateOfAttendance.doc

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PC 2-Certificate in Plumbing

- **Practical Demonstration Videos**

Plumbing.mp4 (73.02MB)
http://www.filefactory.com/file/2hnmuhbjzymj/n/Plumbing.mp4

Plumbing 2.mp4 (22.91MB)
http://www.filefactory.com/file/2vtgh11has59/n/Plumbing_2.mp4

Plumbing 3.mp4 (61.84MB)
http://www.filefactory.com/file/373pyjlbz6mz/n/Plumbing_3.mp4

Pipe fitting 1.mp4 (25.03MB)
http://www.filefactory.com/file/3tdbogcg3knl/n/Pipe_fitting_1.mp4

Pipe fitting 1a.mp4 (48.72MB)
http://www.filefactory.com/file/4xkuc8j63wdl/n/Pipe_fitting_1a.mp4

Pipe fitting 2.mp4 (12.61MB)
http://www.filefactory.com/file/32wogdocmff3/n/Pipe_fitting_2.mp4

- **Written Lesson Notes in Myanmar+ English**

http://www.filefactory.com/file/5piy9frkipw3/n/CE_ME_Part_2_pdf

Page	Contents	Unit Code
1-51	Piping	Building Construction

http://www.filefactory.com/file/6vx58ad9bg9/n/CE_ME_Part_3_pdf

Page	Contents	Unit Code
35-100	Water Supply	Building Construction

http://www.filefactory.com/file/49y4g244y48d/n/Civil_Engg_Part_2_pdf

Page	Contents	Unit Code
1-40	Piping	Building Construction

57-100	Plumbing	Building Construction

(R776)

http://www.filefactory.com/file/2qd51goi5gzf/n/Civil_Engg_Part_3_pdf

Page	Contents	Unit Code
73-100	Sanitary Plumbing	Building Construction

(R778)

http://www.filefactory.com/file/2z26h0f5oqhh/n/Civil_Engg_Part_5_pdf

Page	Contents	Unit Code
1-9	Piping	Building Construction

http://www.filefactory.com/file/1jken9v01229/n/Civil_Engg_Part_6_pdf

Page	Contents	Unit Code
58-100	Drainage pipe, Ventilation	Building services

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www.highlightcomputer.com/RequestingCertificateOfAttendance.doc

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PC 3-Certificate in Building Construction

- **Practical Demonstration Videos**

Scaffolding.mp4 (16.29MB)
http://www.filefactory.com/file/28okhvjjk6b9/n/Scaffolding.mp4

Construction 1.mp4 (39.82MB)
http://www.filefactory.com/file/gxxi4tiz645/n/Construction_1.mp4

Construction 2.mp4 (64MB)
http://www.filefactory.com/file/1vz2rroocyt5/n/Construction_2.mp4

Construction 3.mp4 (18.85MB)
http://www.filefactory.com/file/23kr14xaqsh/n/Construction_3.mp4

Roofing 1.mp4 (53.25MB)
http://www.filefactory.com/file/4g238zoc0auh/n/Roofing_1.mp4

Roofing 2.mp4 (20.73MB)
http://www.filefactory.com/file/5bkowq2urqm1/n/Roofing_2.mp4

Stair Construction.mp4 (20.51MB)
http://www.filefactory.com/file/4gvu14cwju6b/n/Stair_Construction.mp4

- **Written Lesson Notes in Myanmar+ English**

(R893)

http://www.filefactory.com/file/2ihy0rlc01gx/n/IMT_Heat_Workshop_11_pdf

Page	Contents	Unit Code
26-40	Engineering Drawing	Electrical Engineering (GTI)

(R870)

http://www.filefactory.com/file/1mch26wp0kpj/ICS+GTI_Notes_6.pdf

Page	Contents	Unit Code
46-82	Building Construction	Building Construction

(R766)

http://www.filefactory.com/file/22ujvs2e3jub/n/CE_ME_Part_4_pdf

Page	Contents	Unit Code
34-43	Building Construction Lesson 29,30	Building Construction
44-56	Building Construction Lesson 25-28	Building Construction
57-64	Building Construction Lesson 13,14	Building Construction

(R851)

http://www.filefactory.com/file/1y3ex0ve3a99/n/GTI_Notes_Part_8_pdf

Page	Contents	Unit Code
39-68	Engineering Materials	Electrical Engineering (GTI)

(R870)

http://www.filefactory.com/file/1mch26wp0kpj/ICS+GTI_Notes_6.pdf

Page	Contents	Unit Code
46-82	Building Construction	Building Construction

http://www.filefactory.com/file/tkgrzxydpdl/n/Civil_Engg_Part_1_pdf

Page	Contents	Unit Code
28-76	Installing fixtures and vents	Civil Engineering

(R763)

http://www.filefactory.com/file/1zieo3outouj/n/CE_ME_Part_1_pdf

Page	Contents	Unit Code
1-64	Painting	Building Construction

(R764)

http://www.filefactory.com/file/5piy9frkipw3/n/CE_ME_Part_2_pdf

Page	Contents	Unit Code
53-100	Colour Painting	Building Construction

PC 4-Certificate in Gutter Construction

- **Practical Demonstration Videos**

Wall Guttering .mp4 (24.14MB)
http://www.filefactory.com/file/3j443miuh3j9/n/Wall_Guttering_.mp4

Guttering.mp4 (10.15MB)
http://www.filefactory.com/file/6xeottgjxa3p/n/Guttering.mp4

- **Written Lesson Notes in Myanmar+ English**

(R776)

http://www.filefactory.com/file/2qd51goi5gzf/n/Civil_Engg_Part_3_pdf

Page	Contents	Unit Code
28-72	Spouting/ Guttering	Building Construction

(R779)

http://www.filefactory.com/file/1jken9v01229/n/Civil_Engg_Part_6_pdf

Page	Contents	Unit Code
58-100	Drainage pipe, Ventilation	Building services

- **Certificate of Attendance**

Certificate of Attendance in Electronic Format will be issued upon filling & returning the following form

www.highlightcomputer.com/RequestingCertificateOfAttendance.doc

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Mechanical Engineering

PC 5-Certificate in Fitting & Machining

- **Practical Demonstration Videos**

Shaper.mp4 (40.68MB)
http://www.filefactory.com/file/1xrbp9zoi3pf/n/Shaper.mp4

Shaping machine.mp4 (62.59MB)
http://www.filefactory.com/file/5heypg8fsgbr/n/Shaping_machine.mp4

Milling.mp4 (31.41MB)
http://www.filefactory.com/file/7dihefde9afb/n/Milling.mp4

Lathe.mp4 (112.89MB)
http://www.filefactory.com/file/2z4mtc4nznrz/n/Lathe.mp4

Drilling machine.mp4 (40.07MB)
http://www.filefactory.com/file/771th5ykk78v/n/Drilling_machine.mp4

Drilling.mp4 (25.39MB)
http://www.filefactory.com/file/5okp3vhcbvx9/n/Drilling.mp4

CNC 1.mp4 (200.62MB)
http://www.filefactory.com/file/5iyf7x9iae5x/n/CNC_1.mp4

CNC 2.mp4 (6.01MB)
http://www.filefactory.com/file/33jdky8ezy0d/n/CNC_2.mp4

CNC 3.mp4 (121.82MB)
http://www.filefactory.com/file/68ihgtakv4m5/n/CNC_3.mp4

CNC 4.mp4 (32.42MB)
http://www.filefactory.com/file/6v6qfbpq74mr/n/CNC_4.mp4

CNC 5.mp4 (29.24MB)
http://www.filefactory.com/file/6awu2bzucwth/n/CNC_5.mp4

Written Lesson Notes in Myanmar+ English

(R767)

http://www.filefactory.com/file/ze4c3alq2wr/n/CE_ME_Part_5_pdf

Page	Contents	Unit Code
1-77	Fitting & Machining	Mechanical Engineering

(R768)

http://www.filefactory.com/file/5o3acyqd4bcr/n/CE_ME_Part_6_pdf

Page	Contents	Unit Code

1-100	Fitting & Machining	Mechanical Engineering

(R769)

http://www.filefactory.com/file/sy9cu65jd5/n/CE_ME_Part_7_pdf

Page	Contents	Unit Code
1-117	Fitting & Machining	Mechanical Engineering

(R844)

http://www.filefactory.com/file/1y2zj6qczocz/n/GTI_Notes_Part_1_pdf

Page	Contents	Unit Code
78-92	Production Technology + Metallurgy	Mechanical Engineering (GTI)

(R845)

http://www.filefactory.com/file/3me8ts2l8aal/n/GTI_Notes_Part_2_pdf

Page	Contents	Unit Code
1-7	Workshop Technology Notes	WT301 Workshop Technology (RIT)

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(R893)

http://www.filefactory.com/file/2ihy0rlc01gx/n/IMT_Heat_Workshop_11_pdf

Page	Contents	Unit Code
42-58	Materials	Mechanical Engineering (GTI)
59-92	Workshop	Mechanical Engineering (GTI)
93-111	Metallurgy	Mechanical Engineering (GTI)

- **Certificate of Attendance**

Certificate of Attendance in Electronic Format will be issued upon filling & returning the following form

www.highlightcomputer.com/RequestingCertificateOfAttendance.doc

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PC 6-Certificate in Welding

- **Practical Demonstration Videos**

Welding.mp4 (0.68MB)
http://www.filefactory.com/file/4siqo3334ce7/n/Welding.mp4

Welding 2.mp4 (89.19MB)
http://www.filefactory.com/file/1kca9p5e5zpz/n/Welding_2.mp4

- **Written Lesson Notes in Myanmar+ English**

(R823)

http://www.filefactory.com/file/43gv18ci0gcf/n/EE602_Welding_and_machining_8_pdf

Page	Contents	Unit Code
1-90	Welding	Mechanical Engineering

(R824)

http://www.filefactory.com/file/ngzp09kg9ot/n/EE602_Welding_and_machining_9_pdf

Page	Contents	Unit Code
1-141	Welding	Mechanical Engineering

(R825)

http://www.filefactory.com/file/6002tx3yif2j/n/EE602_Welding_and_machining_10_pdf

Page	Contents	Unit Code
1-101	Welding	Mechanical Engineering

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PC 7-Certificate in Engine Operation & Basic Servicing

- **Practical Demonstration Videos**

Engine Operation

Engine Operation.mp4 (2.48MB)
http://www.filefactory.com/file/7c7tyfzqt9g7/n/Engine_Operation.mp4

Ignition 1.mp4 (25.73MB)
http://www.filefactory.com/file/1umau9pgkjep/n/Ignition_1.mp4

Engine 1.mp4 (2.62MB)
http://www.filefactory.com/file/20grs6hcn7t9/n/Engine_1.mp4

Engine 3.mp4 (53.26MB)
http://www.filefactory.com/file/1zrrpngfhghr/n/Engine_3.mp4

Engine 4.mp4 (80.73MB)
http://www.filefactory.com/file/1enccmrgo6tz/n/Engine_4.mp4

Engine 5.mp4 (25.59MB)
http://www.filefactory.com/file/5anx4noz7xyf/n/Engine_5.mp4

Steering

Steering.mp4 (5.08MB)
http://www.filefactory.com/file/7jy5b4zvoetn/n/Steering.mp4

Steering 2.mp4 (5.54MB)
http://www.filefactory.com/file/42a3ssvz9i53/n/Steering_2.mp4

Steering 3.mp4 (1.52MB)
http://www.filefactory.com/file/5rtjpowbmgl5/n/Steering_3.mp4

Steering 4.mp4 (109.62MB)
http://www.filefactory.com/file/6ri4hph13i4v/n/Steering_4.mp4

Power steering.mp4 (16.56MB)
http://www.filefactory.com/file/6ug9463l8s9b/n/Power_steering.mp4

Power steering1a.mp4 (23.39MB)
http://www.filefactory.com/file/4ppbf27cxcz/n/Power_stering1a.mp4

Power steering 2.mp4 (16.95MB)
http://www.filefactory.com/file/2z20gcls86lp/n/Power_steering_2.mp4

Power steering 3.mp4 (56.76MB)
http://www.filefactory.com/file/7j2tzk9ddx15/n/Power_steering_3.mp4

Engine Pumps

Pump assembly .mp4 (9.39MB)
http://www.filefactory.com/file/3emhsn647vn3/n/Pump_assembly_.mp4

Oil pump.mp4 (15.13MB)
http://www.filefactory.com/file/2lhq4ipargbt/n/Oil_pump.mp4

Oil pump 1.mp4 (42.18MB)
http://www.filefactory.com/file/5f96vtsko0s1/n/Oil_pump_1.mp4

hydraulic pump assembly.mp4 (80.69MB)
http://www.filefactory.com/file/77zprzxvfle1/n/hydraulic_pump_assembly.mp4

Pump operation.mp4 (12.12MB)
http://www.filefactory.com/file/1oe1cmhinnwt/n/Pump_operation.mp4

Gear box+Clutch

Gear box+Clutch 1.mp4 (35.23MB)
http://www.filefactory.com/file/12wv73o7diqr/n/Gear_box+Clutch_1.mp4

Gear box+Clutch 2.mp4 (38.58MB)
http://www.filefactory.com/file/7cbvj9rlbxhd/n/Gear_box+Clutch_2.mp4

Engine Maintenance & Assembly

Engine maintenance-Oil changing.mp4 (23.83MB)
http://www.filefactory.com/file/68omwqhrau0t/n/Engine_maintenance-Oil_changing.mp4

Engine maintenance -Servicing.mp4 (34.51MB)
http://www.filefactory.com/file/2n5uy1ta3ioh/n/Engine_maintenance_-Servicing.mp4

Engine Assembly.mp4 (29.96MB)
http://www.filefactory.com/file/5lrej3xbop4p/n/Engine_Assembly.mp4

Engine Assembly 2.mp4 (25.97MB)
http://www.filefactory.com/file/115box7eap3h/n/Engine_Assembly_2.mp4

Engine assembly 3.mp4 (67.54MB)
http://www.filefactory.com/file/6kl1pcggkej1/n/Engine_assembly_3.mp4

Engine Assembly 4.mp4 (124.07MB)
http://www.filefactory.com/file/62mq0m9ehzhv/n/Engine_Assembly_4.mp4

Compressor

Compressor 1.mp4 (71.09MB)
http://www.filefactory.com/file/1gcvoo8t4b3n/n/Compressor_1.mp4

Compressor 2.mp4 (6.76MB)
http://www.filefactory.com/file/1o5vqnjaq2bx/n/Compressor_2.mp4

- **Written Lesson Notes in Myanmar+ English**

http://www.filefactory.com/file/7asr4tp1r3sr/n/EI_Myanmar_ICS_Marine_Engg_Part_10_pdf

Page	Contents	Unit Code
1-60	Petrol Engine	Mechanical Engineering (GTI)

(R844)

http://www.filefactory.com/file/1y2zj6qczocz/n/GTI_Notes_Part_1_pdf

Page	Contents	Unit Code
1-77	Marine Diesel Engine	IMT Marine Engineering
76-106	Theory of Machines	Mechanical Engineering (GTI)
107-125	Steam Engines & Boilers	Mechanical Engineering (GTI)

(R846)

http://www.filefactory.com/file/1vwr2z3lmrg9/n/GTI_Notes_Part_3_pdf

Page	Contents	Unit Code
1-25	Engine	Mechanical Engineering (GTI)

26-98	Diesel Engine	Mechanical Engineering (GTI)
99-125	Automotive Technology	Mechanical Engineering (GTI)

(R767)

http://www.filefactory.com/file/ze4c3alq2wr/n/CE_ME_Part_5_pdf

Page	Contents	Unit Code
78-100	Pnuematics	Mechanical Engineering

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C 8-Certificate in Air-conditioning & Refrigeration Basic Servicing

- **Practical Demonstration Videos**

Aircon-Refrigeration 1.mp4 (54.08MB)
http://www.filefactory.com/file/6c2ejd4u10l9/n/Aircon-Refrigeration_1.mp4

Air con+Refrigeration 2.mp4 (130.55MB)
http://www.filefactory.com/file/2stdbbgclp3/n/Air_con+Refrigeration_2.mp4

- **Written Lesson Notes in Myanmar+ English**

(R864)

http://www.filefactory.com/file/1r1v0xka9qt9/n/ME434_304_pdf

Page	Contents	Unit Code
86-126	Refrigeration	Mechanical Engineering (GTI)

(R779)

http://www.filefactory.com/file/1jken9v01229/n/Civil_Engg_Part_6_pdf

Page	Contents	Unit Code
1-57	Cooling ,Heating, Lighting	Building services

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Certificate of Attendance in Electronic Format will be issued upon filling & returning the following form

www.highlightcomputer.com/RequestingCertificateOfAttendance.doc

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Electrical Engineering

PC 9-Certificate in Electrical Wiring

- **Practical Demonstration Videos**

Wiring Trunking Assembly.mp4 (68.41MB)
http://www.filefactory.com/file/qc12yb05nv1/n/Wiring_Trunking_Assembly.mp4

Use the fish tape to pull the cable.mp4 (66.25MB)
http://www.filefactory.com/file/633douc24xe7/n/Use_the_fish_tape_to_pull_the_cable.mp4

UG Conduit installing.mp4 (37.2MB)
http://www.filefactory.com/file/1g511r9glm8t/n/UG_Conduit_installing.mp4

Socket outlet refitting.mp4 (34.4MB)
http://www.filefactory.com/file/1sjlmhsrvro1/n/Socket_outlet_refitting.mp4

Pulling cable 1.mp4 (54.81MB)
http://www.filefactory.com/file/17vp65ypsirj/n/Pulling_cable_1.mp4

Pulling cable .mp4 (54.81MB)
http://www.filefactory.com/file/wca8oavoppz/n/Pulling_cable_.mp4

Installing EMT+MC Cable 1.mp4 (133.85MB)
http://www.filefactory.com/file/61fff5q2jv33/n/Installing_EMT+MC_Cable_1.mp4

Installing EMT+MC Cable 2.mp4 (9.7MB)
http://www.filefactory.com/file/68b5xiakqibf/n/Installing_EMT+MC_Cable_2.mp4

Main switch board & socket outlet demo.mp4 (7.89MB)
http://www.filefactory.com/file/j8xe0bc8scl/n/Main_switch_board_&_socket_outlet_demo.mp4

Main switch board & socket outlet demo 2.mp4 (0.17MB)
http://www.filefactory.com/file/2ox3yuai0f3t/n/Main_switch_board_&_socket_outlet_demo_2.mp4

Installing feeder wire from main busbar.mp4 (39.63MB)
http://www.filefactory.com/file/2mzse07ajbs5/n/Installing_feeder_wire_from_main_busbar.mp4

Installing feeder wire from main busbar 1.mp4 (16.53MB)
http://www.filefactory.com/file/6c6l4j43fq3h/n/Installing_feeder_wire_from_main_busbar_1.mp4

Install a sub panel.mp4 (165.11MB)
http://www.filefactory.com/file/78cij0a9xfaz/n/Install_a_sub_panel.mp4

Data cabling.mp4 (56.01MB)
http://www.filefactory.com/file/nhx1jss6s2v/n/Data_cabling.mp4

Dimmer light installation.mp4 (17.73MB)
http://www.filefactory.com/file/py8kl178bb5/n/Dimmer_light_installation.mp4

- **Written Lesson Notes in Myanmar+ English**

(R855)

http://www.filefactory.com/file/6fls6bjgk289/n/GTI_Notes_Part_12_pdf

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Page	Contents	Unit Code
55-84	Electrical Wiring	Electrical Engineering (GTI)
91-110	Electrical Wiring	Electrical Engineering (GTI)
111-123	Wiring Rules	Electrical Engineering (GTI)

- **Certificate of Attendance**

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www.highlightcomputer.com/RequestingCertificateOfAttendance.doc

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PC 10-Certificate in Electrical Machine Winding

- **Practical Demonstration Videos**

Three Phase motor operation.mp4 (26.73MB)
http://www.filefactory.com/file/63dp8rzwhimz/n/Three_Phase_motor_operation.mp4

Transformer Coil Winding.mp4 (63.05MB)
http://www.filefactory.com/file/4m6361gl8hl1/n/Transformer_Coil_Winding.mp4

Removing the motor winding.mp4 (54.23MB)
http://www.filefactory.com/file/1syreiox4wgf/n/Removing_the_motor_winding.mp4

Motor Winding.mp4 (15.89MB)
http://www.filefactory.com/file/4pmvtsi17vg9/n/Motor_Winding.mp4

Motor manufacturing.mp4 (34.52MB)
http://www.filefactory.com/file/2cih4cdsnltr/n/Motor_manufacturing.mp4

Fitting the motor winding in motor production factory.mp4 (70.1MB)
http://www.filefactory.com/file/4hsyf1n6wrjz/n/Fitting_the_motor_winding_in_motor_production_factory.mp4

Coil winding manufacturing.mp4 (29.84MB)
http://www.filefactory.com/file/3f0ffbncxzt5/n/Coil_winding_manufacturing.mp4

- **Written Lesson Notes in Myanmar+ English**

http://www.filefactory.com/file/76o9ifb6f2jj/n/EI_Myanmar_ICS_Marine_Engg_Part_8_pdf

Page	Contents	Unit Code
1-6	Electric Motor Control	Electrical power Engineering (GTI)

(R842B)

http://www.filefactory.com/file/1xit82l0aj2d/n/EI_Myanmar_ICS_Marine_Engg_Part_9_pdf

Page	Contents	Unit Code
1-117	Electric Motor Control	Electrical power Engineering (GTI)

http://www.filefactory.com/file/7asr4tp1r3sr/n/EI_Myanmar_ICS_Marine_Engg_Part_10_pdf

Page	Contents	Unit Code
61-70	Electric Motor control	Electrical Power Engineering (GTI)

(R850)

http://www.filefactory.com/file/2h32r39ll501/n/ICS_GTI_Notes_7_pdf

Page	Contents	Unit Code
1-96	Motor Repair	Electrical Engineering (GTI)

http://www.filefactory.com/file/1yrxcifzfecf/n/GTI_Notes_Part_9_pdf

Page	Contents	Unit Code
All	Electric Motor repair	Electrical Engineering (GTI)

R870)

http://www.filefactory.com/file/1mch26wp0kpj/ICS+GTI_Notes_6.pdf

Page	Contents	Unit Code
1-46	Transformer Design	Electrical Engineering

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www.highlightcomputer.com/RequestingCertificateOfAttendance.doc

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PC 11-Certificate in Electrical Power Wiring & Switch Gear Installation

- **Practical Demonstration Videos**

Circuit Breakers & Switch Boards

Switch board Circuit breaker Installation 3.mp4 (33.81MB)
http://www.filefactory.com/file/wagt5a5bjjz/n/Switch_board_Circuit_breaker_Installation_3.mp4

Switch board Circuit breaker Installation 2.mp4 (0.39MB)
http://www.filefactory.com/file/353v5nppktwf/n/Switch_board_Circuit_breaker_Installation_2.mp4

Switch board Circuit breaker Installation 1.mp4 (167.18MB)
http://www.filefactory.com/file/1avuobq7fh9z/n/Switch_board_Circuit_breaker_Installation_1.mp4

Removal of link to disconnecting circuit breaker 132KV.mp4 (108.08MB)
http://www.filefactory.com/file/6d0xw9fdrpvr/n/Removal_of_link_to_disconnecting_circuit_breaker_132KV.mp4

Line breaker action.mp4 (16.58MB)
http://www.filefactory.com/file/4mnkpfng84tr/n/Line_breaker_action.mp4

Circuit Breaker Operation.mp4 (22.04MB)
http://www.filefactory.com/file/4kf6zjzkkuzh/n/Circuit_Breaker_Operation.mp4

Circuit Breaker Testing.mp4 (85.51MB)
http://www.filefactory.com/file/772y45oyb2al/n/Circuit_Breaker_Testing.mp4

Power Transformer

Power Transformers.mp4 (76.55MB)
http://www.filefactory.com/file/10vvwztf8xxn/n/Power_Transformers.mp4

Power Transformer Installation.mp4 (7.52MB)
http://www.filefactory.com/file/5xwru7hc6ix1/n/Power_Transformer_Installation.mp4

High Power Transformer.mp4 (84.3MB)
http://www.filefactory.com/file/4jk3tfh10mnn/n/High_Power_Transformer.mp4

Over Head & Under Ground Lines

UG Line Construction.mp4 (25.19MB)
http://www.filefactory.com/file/1s4i34cumc0h/n/UG_Line_Construction.mp4

Erecting the OH Line tower.mp4 (62.3MB)
http://www.filefactory.com/file/4p282vhla2ch/n/Erecting_the_OH_Line_tower.mp4

OH Line wire installation.mp4 (52.97MB)
http://www.filefactory.com/file/4gahulyah75z/n/OH_Line_wire_installation.mp4

Operation of UHV Line Circuit Breaker.mp4 (5.58MB)
http://www.filefactory.com/file/5jnob6ztcdsv/n/Operation_of_UHV_Line_Circuit_Breaker.mp4

OH Line Installation.mp4 (27.07MB)
http://www.filefactory.com/file/860b1wmjmjv/n/OH_Line_Installation.mp4

OH Line Installation 1.mp4 (91.93MB)
http://www.filefactory.com/file/22cxautkqj3z/n/OH_Line_Installation_1.mp4

OH Line cable installation.mp4 (43.12MB)
http://www.filefactory.com/file/48uu8mcub9cf/n/OH_Line_cable_installation.mp4

Line maintenance.mp4 (56.41MB)
http://www.filefactory.com/file/wy2q54pngwr/n/Line_maintenance.mp4

Line to line fault.mp4 (4.96MB)
http://www.filefactory.com/file/pxeio9jnwb3/n/Line_to_line_fault.mp4

Line maintenance 2.mp4 (38.39MB)
http://www.filefactory.com/file/3r0myz0nshxj/n/Line_maintenance_2.mp4

Line faults+ Switchboard fault-Fire.mp4 (61.36MB)
http://www.filefactory.com/file/1rwryqzfplan/n/Line_faults+_Switchboard_fault-Fire.mp4

HV DC Line.mp4 (18.73MB)
http://www.filefactory.com/file/uppn6jee7s5/n/HV_DC_Line.mp4

Electrical Safety & Electric Fire Awareness

Power line accident due to ladder.mp4 (10.96MB)
http://www.filefactory.com/file/60bpqkz651tr/n/Power_line_accident_due_to_ladder.mp4

Electric Fire 1.mp4 (62.65MB)
http://www.filefactory.com/file/3k0nyrn8l68n/n/Electric_Fire_1.mp4

Electric Fire 2.mp4 (38.11MB)
http://www.filefactory.com/file/e82aysxd83d/n/Electric_Fire_2.mp4

Soldering.mp4 (89.06MB)
http://www.filefactory.com/file/6pevpmq2wrm9/n/Soldering.mp4

- **Written Lesson Notes in Myanmar+ English**

(R856)

http://www.filefactory.com/file/1a3uyymr34y9/n/GTI_Notes_Part_13_pdf

Page	Contents	Unit Code
1-75	Switch Gear	Electrical Engineering (GTI)
76-104	Switch Gear	Electrical Engineering (GTI)

(R861)

http://www.filefactory.com/file/2d3iksrb2ds1/n/GTI_Notes_Part_18_pdf

Page	Contents	Unit Code
12-53	Power Wiring	Electrical Engineering (GTI)

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Electrical Trade Resources

Stage 1 Electrical workshop practicals for advanced diploma students Version 1.pdf (1.09MB)

http://www.filefactory.com/file/7iwfx5bnpiw7/n/Stage_1_Electrical_workshop_practicals_for_advanced_diploma_students_Version_1.pdf

WorkShop Part 2 (Practical 1 to 6).pdf (11.17MB)

http://www.filefactory.com/file/ns7oro7zmp9/n/WorkShop_Part_2_(Practical_1_to_6).pdf

WorkShop Part 2 (Practical 7 to 12).pdf (19.46MB)

http://www.filefactory.com/file/78hecvpr6rm5/n/WorkShop_Part_2_(Practical_7_to_12).pdf

WorkShop Part 2 (Practical 13 to 17).pdf (18.1MB)

http://www.filefactory.com/file/1llck291bsaz/n/WorkShop_Part_2_(Practical_13_to_17).pdf

WorkShop Part 2 (Practical 18 to 21).pdf (13.56MB)

http://www.filefactory.com/file/6ksswm66idod/n/WorkShop_Part_2_(Practical_18_to_21).pdf

ElectricalWorkshopPart2(G003+G004+G009).pdf (62.52MB)

http://www.filefactory.com/file/30vtm640ehrx/n/ElectricalWorkshopPart2(G003+G004+G009).pdf

ElectricalWorkshopPart3(G008)(Group3InstrumentsDevices).pdf (0.29MB)

http://www.filefactory.com/file/6hh8qwutahb3/n/ElectricalWorkshopPart3(G008)(Group3InstrumentsDevices).pdf

ElectricalWorkshopPart3(G008)(Group2LineProtection).pdf (0.3MB)

http://www.filefactory.com/file/3gtb1qxopyt/n/ElectricalWorkshopPart3(G008)(Group2LineProtection).pdf

ElectricalWorkshopPart3(G008)(Group1Machine).pdf (0.3MB)

http://www.filefactory.com/file/tpdtw5gg8lr/n/ElectricalWorkshopPart3(G008)(Group1Machine).pdf

Wiring Practicals.pdf (12.77MB)

http://www.filefactory.com/file/1qs84ecgunx1/n/Wiring_Practicals.pdf

Practical Wiring.pdf (12.41MB)

http://www.filefactory.com/file/6flt0lfwfbg5/n/Practical_Wiring.pdf

Wiring Equipments to purchase.doc (1.09MB)

http://www.filefactory.com/file/7458b8w6rwin/n/Wiring_Equipments_to_purchase.doc

Advanced Wiring Part 1 and 2.pdf (1.72MB)

http://www.filefactory.com/file/635e0bxbri1r/n/Advanced_Wiring_Part_1_and_2.pdf

G033+G007-Cable_Termination.pps (3.54MB)

http://www.filefactory.com/file/6gbloztbbq2j/n/G033+G007-Cable_Termination.pps

HVCA Customer Presentation Joint Installation 10_2005.ppt (0.22MB)

http://www.filefactory.com/file/69rl3wths0x1/n/HVCA_Customer_Presentation_Joint_Installation_10_2005.ppt

G106+G033 Practical.pdf (0.34MB)

http://www.filefactory.com/file/2ejyts6jm8d7/n/G106+G033_Practical.pdf

G033+G007-ELV Wiring.pps (1.35MB)

http://www.filefactory.com/file/7hsd4co2dq7x/n/G033+G007-ELV_Wiring.pps

G033+G007-Cable_Termination.pdf (1.7MB)

http://www.filefactory.com/file/6mk3rd5eifnf/n/G033+G007-Cable_Termination.pdf

G008Practicals.pdf (9.18MB)

http://www.filefactory.com/file/7fsokrbjm4tp/n/G008Practicals.pdf

G003+G004+G009Practicals.pdf (12.48MB)

http://www.filefactory.com/file/dd9656rxnp1/n/G003+G004+G009Practicals.pdf

Example diagram.pdf (0.11MB)

http://www.filefactory.com/file/7j7r3p3o3x19/n/Example_diagram.pdf

Example diagram for online practical.pdf (0.11MB)

http://www.filefactory.com/file/1d562uaduflf/n/Example_diagram_for_online_practical.pdf

Ckt example.pdf (0.1MB)

http://www.filefactory.com/file/7i1pn0kuc1t/n/Ckt_example.pdf

Cable technology Mid-EastAfrica Distributor Training, Ottobr.ppt (23.37MB)

http://www.filefactory.com/file/4p5gunst29ov/n/Cable_technology_Mid-EastAfrica_Distributor_Training,_Ottobr.ppt

Part (3) Practical Training for Tradesman, Technician & Engineer Level

The following site contains Practical Training for Tradesman, Technician & Engineer Level.

Appropriate mixture of practical training should be arranged in Graduate Capstone 2 Practical Training & Assessment.

http://www.highlightcomputer.com/PracticalCourses.htm

The followings are reference handbook collection for Engineer Level Practical Training.

The resources in digital format can be provided to the teachers and trainers by the course developer. (Not all resources are downloadable from internet. Authorized teachers & trainers are required to meet the course developer)

PC-Practical Course (Level 3 Training for Engineers)

Civil Engineering

PC 20-Certificate in Civil Engineering Design (Application of Civil Engineering Design Handbooks)

- **Written Lesson Notes in English**

  Accessible from the following link

  www.highlightcomputer.com/DesignHandBooks.htm

  The reference design books will be updated from time to time. The followings are the currently available design handbooks. Password is protected. The candidate can request the password by sending e-mail to

  iqytechnicalcollege@gmail.com

PC20(1)-Civil Engineer Design- Building Services Handbook.pdf

PC20(2)-Civil Engineer Design- Design of Masonry Structures.pdf

PC20(3)-Civil Engineer Design-Building Design and Construction Handbook.pdf

PC20(4)-Civil Engineer Design-Civil Engineering Handbook(Second Edition).pdf

PC20(5)-Civil Engineer Design-Construction of buildings Volume 1.pdf

PC20(6)-Civil Engineer Design-Construction Of Buildings Volume 2.pdf

PC20(7)-Civil Engineer Design-Fundamentals of wood design and engineering.pdf

PC20(8)-Civil Engineer Design-Handbook_of_Structural_Engineering.pdf

PC20(9)-Civil Engineer Design-Reinforced concrete analysis and design.pdf

PC20(10)-Civil Engineer Design-Residential_Structural_Design_Guide.pdf

PC20(11)-Civil Engineer Design-Soil engineering - testing, design, and remediation.pdf

PC20(12)-Civil Engineer Design-Working Drawings Handbook.pdf

PC20(13)-Civil Engineer Design-Building_Const_Handbook.pdf

(The updated textbooks which are not included in the above list can also be found in that link)

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  Certificate of Attendance in Electronic Format will be issued upon filling & returning the following form

www.highlightcomputer.com/RequestingCertificateOfAttendance.doc

- **Certificate of Competency**

  Certificate of Competency can be issued if the candidate can present three designs which are designed by themselves at the workplace together with his or her supervisor's certification

Mechanical Engineering

PC 21-Certificate in Mechanical Engineering Design (Application of Mechanical Engineering Design Handbooks)

- **Written Lesson Notes in English**

  Accessible from the following link

  www.highlightcomputer.com/DesignHandBooks.htm

The reference design books will be updated from time to time. The followings are the currently available design handbooks. Password is protected. The candidate can request the password by sending e-mail to

iqytechnicalcollege@gmail.com

PC21(1)-Mechanical Engineer Design-AirCondition Design Reference.pdf

PC21(2)-Mechanical Engineer Design-Building Services Engineering Spreadsheets.pdf

PC21(3)-Mechanical Engineer Design-Building Tech Plumbing.pdf

PC21(4)-Mechanical Engineer Design-Ferrous_Foundryman's_Handbook.pdf

PC21(5)-Mechanical Engineer Design-Hazardous_Chemicals_Handbook_2E.pdf

PC21(6)-Mechanical Engineer Design-HVAC-Handbook-AC-and-Ventilation-Controls.pdf

PC21(7)-Mechanical Engineer Design-HVAC-Systems-Design-Handbook-2.pdf

PC21(8)-Mechanical Engineer Design-Industrial_Referigeration.pdf

PC21(9)-Mechanical Engineer Design-Mech_Eng_Calculations.pdf

PC21(10)-Mechanical Engineer Design-Metal_Machining.pdf

PC21(11)-Mechanical Engineer Design-Plant_Engineering_Handbook.pdf

(The updated textbooks which are not included in the above list can also be found in that link)

- **Certificate of Attendance**

Certificate of Attendance in Electronic Format will be issued upon filling & returning the following form

www.highlightcomputer.com/RequestingCertificateOfAttendance.doc

- **Certificate of Competency**

Certificate of Competency can be issued if the candidate can present three designs which are designed by themselves at the workplace together with his or her supervisor's certification

Electrical Engineering

PC 22-Certificate in Electrical Engineering Design (Application of Electrical Engineering Design Handbooks)

- **Written Lesson Notes in English**

  Accessible from the following link
  www.highlightcomputer.com/DesignHandBooks.htm

The reference design books will be updated from time to time. The followings are the currently available design handbooks. Password is protected. The candidate can request the password by sending e-mail to

iqytechnicalcollege@gmail.com

PC22(1)-Electrical Engineer Design-American Electricians' Handbook, 15th Edition.pdf

PC22(2)-Electrical Engineer Design-Design of Electrical Services for Buildings 4th edition.pdf

PC22(3)-Electrical Engineer Design-Electrical Building Services IEE based.pdf

PC22(4)-Electrical Engineer Design-Fire Alarm Signalling Systems.pdf

PC22(5)-Electrical Engineer Design-Handbook of Electrical Design Details.pdf

PC22(6)-Electrical Engineer Design-Handbook of Electrical Installation Practice UK.pdf

PC22(7)-Electrical Engineer Design-Lighting Design Basics.pdf

PC22(8)-Electrical Engineer Design-Newnes Electrical Power Engineer Handbook.pdf

(The updated textbooks which are not included in the above list can also be found in that link)

- **Certificate of Attendance**

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- **Certificate of Competency**

Certificate of Competency can be issued if the candidate can present three designs which are designed by themselves at the workplace together with his or her supervisor's certification

Capstone 1+2 Record Format

Capstone 1+2 Training can be undertaken by Engineering Students throughout their academic study. On successful completion of each theory (Capstone 1 Courses) & practical (Capstone 2) courses, Certificate of Completion can be issued.

Each student will also be provided with Capstone 1+2 Record book in which the trainers / assessors put the completed course and seal it.

At personal interview to issue Registered Engineer Licence, the licence assessor will check those records to determine the candidate's eligibility for Registered Engineer (Independent Practice) or Registered Engineer (Supervised Practice) Licence.

RECORD

Name of Student_____

Name of Degree Course_____

Name of Technological University/ Technical College_____

Year of enrolment_____

Date of Final Year BE/BTech/AGTI Examination_____

Final Year Result of BE/BTech/AGTI Examination (If completed)_____

Capstone Assessment 1 Record

List of completed subjects/ units	Sign & seal by the trainer/assessor
Course Number 1 –General Engineering-Professional Conduct & Ethics. **CIVIL ENGINEERING** **Part 2-General Civil Engineering** Course 2 (CE) General Civil Engineering-Mechanics Course 3 (CE) General Civil Engineering-Structure Course 4 (CE) General Civil Engineering-Geo-technical Course 5 (CE) General Civil Engineering- Transportation Course 6 (CE) General Civil Engineering- Hydraulics ,Hydrology &	

Environmental **Part 3- Civil Engineering Practice** Course 7 (CE) Civil Engineering Practice-Rules & Regulations **ELECTRICAL ENGINEERING** **Part 2 -General Electrical Engineering** Course 2- General Electrical Engineering-Power Course 3-General Electrical Engineering-Building Services **Part 3 -l Electrical Engineering Practice** Course 4 Electrical Engineering Practice Rues & Regulations Course 5 Electrical Engineering Practice –Green Energy Course 6 Electrical Engineering Practice –Electricity Market Course 7 Electrical Engineering Practice –Protection & Safety **MECHANICAL EENGINEERING** **Part 2-General Mechanical Engineering-** Course 2- General Mechanical Engineering- Control And Instrumentations Course 3- General Mechanical Engineering- Mechanics Course 4- General Mechanical Engineering- Manufacturing Course 5- General Mechanical Engineering- Heat Transfer	

Part 2 Mechanical Engineering Practice Course 6- Mechanical Engineering Practice – Piping Course 7- Mechanical Engineering Practice – Air-conditioning & Mechanical Ventilation Course 8- Mechanical Engineering Practice – Gas (Optional) Course 9- Mechanical Engineering Practice – Lift and Hoisting Systems (Optional) Course 10- Mechanical Engineering Practice – Energy Conservation for Mechanical Building Services (Optional)	

Capstone Assessment 2 Record

List of completed subjects/ units	Sign & seal by the trainer/assessor
PC-Practical Course (Level 1 Training for Engineering Tradesmen) Civil Engineering PC 1-Certificate in Bricklaying & Masonry PC 2-Certificate in Plumbing PC 3-Certificate in Building Construction PC 4-Certificate in Gutter Construction Mechanical Engineering PC 5-Certificate in Fitting & Machining	

PC 6-Certificate in Welding PC 7-Certificate in Engine Operation& Basic Servicing PC 8-Certificate in Air-conditioning& Refrigeration Basic Servicing Electrical Engineering PC 9-Certificate in Electrical Wiring PC 10-Certificate in Electrical Machine Winding PC 11-Certificate in Electrical Power Wiring & Switch Gear Installation PC-Practical Course (Level 2 Training for Engineering Technicians) Civil Engineering PC 12-Certificate in Surveying. Quantity Surveying & Estimating Mechanical Engineering PC 13-Certificate in Manufacturing Process Control & CNC PC 14-Certificate in Building Energy Efficiency Electrical Engineering PC 15-Certificate in Advanced Electrical Wiring (AS3000 Standard) PC 16-Certificate in Programmable Logic Controllers PC 17-Certificate in High Voltage Electrical Works PC 19-Certificate in Electrical Laboratory Work PC-Practical Course (Level 3 Training for Engineers) Civil Engineering	

PC 20-Certificate in Civil Engineering Design (Application of Civil Engineering Design Handbooks) PC20(1)-Civil Engineer Design- Building Services Handbook.pdf PC20(2)-Civil Engineer Design- Design of Masonry Structures.pdf PC20(3)-Civil Engineer Design-Building Design and Construction Handbook.pdf PC20(4)-Civil Engineer Design-Civil Engineering Handbook(Second Edition).pdf PC20(5)-Civil Engineer Design-Construction of buildings Volume 1.pdf PC20(6)-Civil Engineer Design-Construction Of Buildings Volume 2.pdf PC20(7)-Civil Engineer Design-Fundamentals of wood design and engineering.pdf PC20(8)-Civil Engineer DesignHandbook_of_Structural_Engineering.pdf PC20(9)-Civil Engineer Design-Reinforced concrete analysis and design.pdf PC20(10)-Civil Engineer Design Residential Structural Design Guide.pdf PC20(11)-Civil Engineer Design-Soil engineering - testing, design, and remediation.pdf PC20(12)-Civil Engineer Design-Working Drawings Handbook.pdf PC20(13)-Civil Engineer Design-Building_Const_Handbook.pdf Mechanical Engineering PC 21-Certificate in Mechanical Engineering Design (Application of Mechanical Engineering Design Handbooks) PC21(1)-Mechanical Engineer Design-AirCondition Design Reference.pdf PC21(2)-Mechanical Engineer Design-Building Services Engineering Spreadsheets.pdf	

PC21(3)-Mechanical Engineer Design-Building Tech Plumbing.pdf PC21(4)-Mechanical Engineer Design Ferrous Foundryman's Handbook.pdf PC21(5)-Mechanical Engineer Design-Hazardous Chemicals Handbook_2E.pdf PC21(6)-Mechanical Engineer Design-HVAC-Handbook-AC-and-Ventilation-Controls.pdf PC21(7)-Mechanical Engineer Design-HVAC-Systems-Design-Handbook-2.pdf PC21(8)-Mechanical Engineer Design-Industrial_Referigeration.pdf PC21(9)-Mechanical Engineer Design-Mech_Eng_Calculations.pdf PC21(10)-Mechanical Engineer Design-Metal_Machining.pdf PC21(11)-Mechanical Engineer Design-Plant Engineering Handbook.pdf Electrical Engineering PC 22-Certificate in Electrical Engineering Design (Application of Electrical Engineering Design Handbooks) PC22(1)-Electrical Engineer Design-American Electricians' Handbook, 15th Edition.pdf PC22(2)-Electrical Engineer Design-Design of Electrical Services for Buildings 4th edition.pdf PC22(3)-Electrical Engineer Design-Electrical Building Services IEE based.pdf PC22(4)-Electrical Engineer Design-Fire Alarm Signalling Systems.pdf PC22(5)-Electrical Engineer Design-Handbook of Electrical Design Details.pdf PC22(6)-Electrical Engineer Design-Handbook of Electrical Installation Practice UK.pdf	

PC22(7)-Electrical Engineer Design-Lighting Design Basics.pdf PC22(8)-Electrical Engineer Design-Newnes Electrical Power Engineer Handbook.pdf	

General Observation & Recommendation

Type of Recommended Licence (Tick one)

( ) Registered Engineer (Independent Practice) Discipline_____

( ) Registered Engineer (Supervised Practice) Discipline_____

( ) Trainee/ Graduate Engineer Discipline_____

Remark-- RE (Independent Practice)--- Pass Capstone Part 1 & Part 2

RE(Supervised Practice)------Pass only Capstone Part 1

Trainee/ Graduate Engineer---No Capstone has been passed.

Capstone Training has limitation on place, the candidate who has attended the training but failed the assessment can resit it at anytime.

Approved by

Signature of Chief Licensing Officer_____

Name of Chief Licensing Officer_____

Reference Number _____

Date_____

Seal—

Architectural Capstone Assessment

COURSE NUMBER 1 (GE)

Part 1 Professional conduct and ethics needs to be completed

Capstone Assessment 1-Engineering Fundamental is to be arranged by referring

Section 2-Architestural Engineering (PDF File Page 188) of Handbook of Engineering Calculations.

1.pdf (18.88MB)

www.mongroupsydney1.com/1.pdf

Capstone Assessment 2-Engineering Practice

Assessment of Candidate's portfolios during the degree study.

Mining, Metallurgy & Petroleum Capstone Assessment

COURSE NUMBER 1 (GE)

Part 1 Professional conduct and ethics needs to be completed

Capstone Assessment 1-The candidates needs to complete Hazardous Area Engineering Course http://www.highlightcomputer.com/profdiphazardous.htm (Not all resources are available online, the digitized resources will be provided to the teachers/ trainers by resource developer)

to get RE (Supervised Practice) & also need to complete some parts of Civil Engineering, Electrical Engineering & Mechanical Engineering Capstone Assessment 1.

RE(Independent Practice) is to be issued depending on completion of relevant postgraduate courses.

Chemical & Bio-technology Capstone Assessment

COURSE NUMBER 1 (GE)

Part 1 Professional conduct and ethics needs to be completed

Capstone Assessment 1-The candidates needs to complete Hazardous Area Engineering Course http://www.highlightcomputer.com/profdiphazardous.htm (Not all resources are available online, the digitized resources will be provided to the teachers/ trainers by resource developer)

to get RE (Supervised Practice) & also need to complete to get RE (Supervised Practice) .

Section 5-Chemical Process & Plant Engineering (PDF File Page 974)

1.pdf (18.88MB)

www.mongroupsydney1.com/1.pdf

RE(Independent Practice) is to be issued depending on completion of relevant postgraduate courses.

Marine Engineering & Naval Architecture Capstone assessment

COURSE NUMBER 1 (GE)

Part 1 Professional conduct and ethics needs to be completed

Marine Engineering

MOT Second Class Part A is required to be completed to get RE (Supervised Practice) .

MOT Second Class Part B is required to be completed to get RE (Independent Practice) .

MOT First Class is required to be completed to get RSE(Marine Engineering).

- Relevant professional assessment by
- The Institution of Marine Engineering, Science and Technology (IMarEST)
- The Royal Institution of Naval Architects (RINA)

are also acceptable to determine the grant of the licences.

Naval Architecture

To seek the specific advice by Naval Architecture PE Assessment Board.

- Relevant professional assessment by
- The Institution of Marine Engineering, Science and Technology (IMarEST)
- The Royal Institution of Naval Architects (RINA)

are also acceptable to determine the grant of the licences.

Mechatronics Engineering Capstone Assessment

COURSE NUMBER 1 (GE)

Part 1 Professional conduct and ethics needs to be completed

It is to be done based on Capstone 1 + 2 Assessments of Electrical, Electronics and Mechanical Engineering disciplines.

Electrical Power System Engineering Capstone Assessment

Electrical Power Engineers who will be working on Public Power Lines and Distribution Systems will need to complete Capstone Assessment 1 & 2 to get RE (Supervised Practice) & RE (General Electrical Engineer Independent Practice) but to be classified as RE (Electrical Power System Independent Practice), the following additional requirements are to be met

- Minimum of Electrican License (Grade 2) from Ministry of No 1 Industry
- Completion of the relevant units in Hazardous Area Engineering Course http://www.highlightcomputer.com/profdiphazardous.htm (Not all resources are available online, the digitized resources will be provided to the teachers/ trainers by resource developer)
- Completion of Electricity Supply Industry Course.

Core units online study

Power System 1

Electrical Distribution

www.highlightcomputer.com/G015-AA Mod.zip

Power System Protection

www.highlightcomputer.com/G015-AE Mod.zip

Power System Operation

www.highlightcomputer.com/G015-AG Mod.zip

High Voltage Switch Board Design
www.highlightcomputer.com/A010Mod.zip

http://www.filefactory.com/file/c0b7f3c/n/A010.zip

Power system 2-Advanced Equipments & Operation

http://www.filefactory.com/file/c0b7a33/n/Power_system_2-G037_G038_G039.zip

Power Transformer

www.highlightcomputer.com/G040Mod.zip

Transmission Line

www.highlightcomputer.com/G042 Mod.zip

Youtube video lessons-Power System

http://www.mongroupsydney1.com/youtubevideos.htm#a

From where the Youtube videos for

Electrical Power Systems I

EE205	Electrical Power System

EE304	Power System Protection

Electrical Power Systems II

EE118	Electrical Energy Supply System

Power Transformers

EE305	Power Transformer

Transmission Lines

EE303	Transmission Line

are to be referenced.

Online Textbooks & Resources

Refer

http://www.mongroupsydney1.com/powersystemengineering.htm

AND

http://www.highlightcomputer.com/videos3.htm

Other general references

http://www.mongroupsydney1.com/advanceddiplomaesi.htm

(Not all resources are available online, the digitized resources will be provided to the teachers/ trainers by resource developer).

Textile Engineering Capstone Assessment

COURSE NUMBER 1 (GE)

Part 1 Professional conduct and ethics needs to be completed

It is to be done based on Capstone 1 Assessments of Mechanical Engineering disciplines in Engineering Mechanic & Engineering Design unit to provide the competency related to machineries used in textile industry.

RE(Independent Practice) is to be issued depending on completion of relevant postgraduate courses.

AGTI (Electrical, Civil, Mechanical) Bridging Course

The holders of AGTI Diploma can pursue the engineering career up to RSE Level.

The academic knowledge relevant to engineering degree level is to be acquired by AGTI holders in line with Professional Engineers Tasks.

The following online study courses which consist of Youtube Video Lessons, Powerpoints, Assignments at the degree level and assignment tasks have been developed.

The holders of AGTI (Civil, Electrical, Mechanical) should study such courses before to take part in training & assessment tasks for RE licences.

If AGTI holders will only want to work as Registered Technician, AGTI will be enough but to pursue the career as Registered Engineer, the skills development at the engineering degree level should be done.

Online Youtube Video Skills Development Courses

http://www.highlightcomputer.com/videos3.htm

Online Lessons Skills Development Courses

http://www.iqytechnicalcollege.com/LessonsAll.htm

Appropriate partnership with the local trainers/ assessors on assignment submission and assessment tasks & certifying tasks will need to be made.

The digitized resources will be provided to the teachers/ trainers by resource developer)

ICT Engineering Capstone Assessment

COURSE NUMBER 1 (GE)

Part 1 Professional conduct and ethics needs to be completed

It is to be done based on Capstone 1 of Assessments of Electrical, Electronics

PLUS

Specific IT Professional Assessment Examinations, the relevant references are as below.

The grant of RE (Supervised Practice) & RE (Independent Practice) depend on the outcomes of the assessment.

Appropriate Industry Certifications such as CISCO, MCSE & other relevant Myanmar Computer Federation Competency Assessments, other overseas ICT Professional bodies competency assessment such as British Computer Society, Singapore Computer Society, Australian Computer Society and those from India, Japan, Hong Kong, Korea etc are also acceptable to determine to grant RE (Supervised Practice) & RE (Independent Practice).

References

CCDA Cisco Certified Design Associate Study Guide.pdf

http://www.mongroupsydney1.com/CCDACiscoCertifiedDesignAssociateStudyGuide.pdf

CCENT Cisco Certified Entry Networking Technician Study Guide.pdf

http://www.mongroupsydney1.com/CCENTCiscoCertifiedEntryNetworkingTechnicianStudyGuide.pdf

CCIE Cisco Certified Internetwork Expert Routing and Switching Exam 350-001.pdf

http://www.mongroupsydney1.com/CCIECiscoCertifiedInternetworkExpertRoutingandSwitchingExam350-001.pdf

CCSP Cisco Secure VPN Exam Certification Guide.pdf

http://www.mongroupsydney1.com/CCSPCiscoSecureVPNExamCertificationGuide.pdf

Cisco CCNP Remote Access Exam Certification Guide.pdf

http://www.mongroupsydney1.com/CiscoCCNPRemoteAccessExamCertificationGuide.pdf

Cisco CCNP Routing Exam Certification Guide.pdf

http://www.mongroupsydney1.com/CiscoCCNPRoutingExamCertificationGuide.pdf

Cisco TCPI Routing Professional Reference.pdf

http://www.mongroupsydney1.com/CiscoTCPIRoutingProfessionalReference.pdf

Cisco TCPI Routing Professional Reference.pdf

http://www.mongroupsydney1.com/CiscoTCPIRoutingProfessionalReference.pdf

Comp TIA Security + Get Certified Get Ahead.pdf

http://www.mongroupsydney1.com/CompTIASecurity+GetCertifiedGetAhead.pdf

MCITP Self-Paced Training Kit-Exam 70-646WindowsServerAdministration.pdf

http://www.mongroupsydney1.com/MCITPSelf-PacedTrainingKit-Exam70-646WindowsServerAdministration.pdf

MCSE Networking Essentials Training Guide Second Edition.pdf

http://www.mongroupsydney1.com/MCSENetworkingEssentialsTrainindGuideSecondEdition.pdf

MCSE Planning and Maintaining Microsoft Windows Server 2003 Network Infrastructure Exam70-293.pdf

http://www.mongroupsydney1.com/MCSEPlanningandMaintainingMicrosoftWindowsServer2003NetworkInfrastructureExam70-293.pdf

MCTS 70-643 Exam Cram.pdf

http://www.mongroupsydney1.com/MCTS70-643ExamCram.pdf

MCTS 70-680 Exam Cram.pdf

http://www.mongroupsydney1.com/MCTS70-680ExamCram.pdf

MCTS Guide to Microsoft Windows Server 2008 Network Infrastructure Configuration.pdf

http://www.mongroupsydney1.com/MCTSGuidetoMicrosoftWindowsServer2008NetworkInfrastructureConfiguration.pdf

Training Kit Exam 70-462- Administering Microsoft SQL Server 2012 Databases.pdf

http://www.mongroupsydney1.com/TrainingKitExam70-462-AdministeringMicrosoftSQLServer2012Databases.pdf

Other Engineering disciplines Capstone Assessment

The detailed plan and arrangement of Engineering Assessment Tests & training for the engineering disciplines apart from above ones should be arranged by relevant technical committees of Myanmar Engineering Council and Myanmar Engineering Society.