GUIDELINES FOR REGISTRATION AS A STRUCTURAL ENGINEER FOR THE DESIGN OF BUIDINGS WITH MORE THAN 4 FLOORS AS PER THE REQUIREMENTS OF THE URBAN DEVELOPMENT AUTHORITY FOR LISTING IN THE DIRECTORY OF STRUCTURAL ENGINEERS MAINTAINED BY IESL

REGISTRATION AS A STRUCTURAL ENGINEER

Corporate Members (Civil) who wish to register themselves as Structural Engineers those who wish to upgrade their registration category to a higher category from their present category, are required to satisfy the requirements set out below under different categories of buildings:

Category 1 – Buildings having 4 floors or less

- Should be a Corporate Member of the Institution in the field of Civil Engineering and should register as a structural engineer of the IESL.

Category 2 – Buildings having more than 4 floors but not more than 8 floors (Intermediate Rise)

- Should be a Corporate Member of the Institution in the field of Civil Engineering
- Possess a minimum of 2 years experience in the design of buildings of this category acquired under the direct supervision of a Structural Design Engineer acceptable to the Institution
- Has to successfully complete a written examination conducted by the Institution and obtain more than 50 out of 100 marks at the examination or should have successfully completed a PGDip or MSc in Structural Engineering acceptable to the Institution
- Has to be successful at an interview conducted by a Panel of Senior Engineers having experience in structural engineering appointed by the Institution

Category 3 – Buildings having more than 8 floors but not more than 12 floors (Middle Rise)

- Should be a Corporate Member of the Institution in the field of Civil Engineering
- Possess a minimum of 3 years experience in the design of buildings of this category acquired under the direct supervision of a Structural Design Engineer acceptable to the Institution
- Has to successfully complete a written examination conducted by the Institution and obtain more than 50 out of 100 marks at the examination or should have successfully completed a PGDip or MSc in Structural Engineering acceptable to the Institution
- Has to be successful at an interview conducted by a Panel of Senior Engineers having experienced in structural engineering and appointed by the Institution

Category 4 – Buildings having more than 12 floors but not more than 20 floors (High Rise) and for Category 5 – Buildings having 20 floors and above (High Rise – Unlimited). Candidate may satisfy either of the options given below

OPTION 1

- Should be a Corporate Member of the Institution in the field of Civil Engineering
- Possess a minimum of 3 years' experience in the design of buildings of this category acquired under the direct supervision of a Structural Design Engineer acceptable to the Institution
- Should have successfully completed a PGDip or MSc in Structural Engineering acceptable to the Institution
- Has to be successful at an interview conducted by a Panel of Senior Engineers having experienced in structural engineering and appointed by the Institution

OPTION 2

- Should be a Corporate Member of the Institution in the field of Civil Engineering
- Posses a minimum of 10 years' experience **out of which 5 years in the design of buildings of this category acquired under the direct** supervision of a Structural **Design** Engineer **and balance 5 years under a Structural Design Engineer who has personal knowledge of the ability and competence of the applicant acceptable to the Institution OR** having 5 years' experience in the structural design and completing a CPD course conducted by IESL exclusively for Design of Multi-storied buildings. The minimum duration of the course shall be 100 hours.
- Has to successfully complete a written examination conducted by the Institution and obtain more than 50 out of 100 marks at the examination
- Has to be successful at an interview conducted by a Panel of Senior Engineers having experienced in structural engineering and appointed by the Institution

Entitlement to register under Category 4 or 5 also depends on the performance of the candidate at the interview and past experience of designing similar works.

Separate question papers will be set as Question Paper A, Question Paper B and Question Paper C for different categories stated above and the applicability of Question Papers are given below:

Question Paper A - for candidates applying to register for structural design of buildings up to 12 floors

Question Paper B - for candidates applying to register for structural design of buildings up to 20 floors and

Question Paper C - for candidates applying to register for structural design of buildings above 20 floors.

INSTITUTION OF ENGINEERS, SRI LANKA
EXAMINATION TO REGISTER AS STRUCTURAL ENGINEERS, DESIGN BUILDINGS UP TO 12 FLOORS
SYLLABUS FOR QUESTION PAPER A

Basis of design	• Design philosophy
	• Loadings
	  ➢ Gravity loading
	  ➢ Wind loading
	  ➢ Seismic loading
	  ➢ Miscellaneous loadings
	  ➢ Combination of loadings
	• Design criteria
	  ➢ Limitation of deflection and drifts
	  ➢ Limitation of crack widths
	• Materials
	  ➢ Timber
	  ➢ Masonry
	  ➢ Reinforced Concrete
	  ➢ Steel
	  ➢ Pre-stressed Concrete
	• Durability and Fire resistance

Structural Forms	• Gravity structural system • Lateral load resistance system
Floor Systems	• Timber framing • Reinforced Concrete Floor Systems • Steel Framing • Pre-stressed Floors Systems
Analysis	• Understanding on structural analysis theories and assumptions • Modal analysis • Static analysis
Modeling	• Fundamental of structural analysis and mechanics of material • Basis of Finite element methods and application • Knowledge on computer programs in the analysis and design

Design	• Fundamental on structural design and detailing with different materials ➢ Timber ➢ Reinforced Concrete ➢ Steel ➢ Pre-stressed Concrete
Concrete technology	• Ingredients of concrete and mix designs • Compliance of concrete • Quality control strategies in concrete production
Sub-Structures	• Knowledge on geotechnical Engineering and site investigation • Design and construction of various foundation types ➢ Shallow foundation ➢ Deep foundations • Durability of foundation system • Pile testing • Water retaining structure • Design & construction of basements • Different type of Earth retaining structures • Shoring systems • Dewatering
Miscellaneous	• Building Facades • Precast and modular constructions • Water proofing methods

INSTITUTION OF ENGINEERS, SRI LANKA
EXAMINATION TO REGISTER AS STRUCTURAL ENGINEERS, DESIGN BUILDINGS UP TO 20 FLOORS
SYLLABUS FOR QUESTION PAPER B

Basis of design	• Design philosophy
	• Loadings
	  ➢ Gravity loading
	  ➢ Wind loading
	  ➢ Seismic loading
	  ➢ Miscellaneous Loadings
	  ➢ Combination of loadings
	• Design criteria
	  ➢ Limitation of deflection and drifts
	  ➢ Limitation of crack widths
	  ➢ Human comfort criteria
	• Materials
	  ➢ Timber
	  ➢ Masonry
	  ➢ Reinforced Concrete
	  ➢ Steel
	  ➢ Pre-stressed Concrete
	• Durability and Fire resistance

Structural Forms	• Gravity structural system • Lateral load resistance system
Floor Systems	• Timber framing • Reinforced Concrete Floor Systems • Steel Framing • Pre-stressed Floors Systems
Analysis	• Understanding on structural analysis theories and assumptions • Modal analysis • Static analysis • Dynamic analysis • Creep, Shrinkage and Temperature effects

Modeling	• Fundamental of structural analysis and mechanics of material • Basis of Finite element methods and application • Knowledge on computer programs in the analysis and design
Design	• Fundamental on structural design and detailing with different materials ➢ Timber ➢ Reinforced Concrete (including High strength concrete) ➢ Steel ➢ Pre-stressed Concrete
Concrete technology	• Ingredients of concrete and mix designs • Compliance of concrete • Quality control strategies in concrete production • High performance and high strength Concrete
Sub-Structures	• Knowledge on geotechnical Engineering and site investigation • Design and construction of various foundation types ➢ Shallow foundation ➢ Deep foundations • Durability of foundation system • Pile testing • Water retaining structure • Design & construction of basements • Different type of Earth retaining structures • Shoring systems • Dewatering
Miscellaneous	• Building Facades • Precast and modular constructions • Fire engineering • Water proofing methods • Sustainable construction

INSTITUTION OF ENGINEERS, SRI LANKA
EXAMINATION TO REGISTER AS STRUCTURAL ENGINEERS, DESIGN BUILDINGS ABOVE 20 FLOORS
SYLLABUS FOR QUESTION PAPER C

Basis of design	• Design philosophy
	• Loadings
	  ➢ Gravity loading
	  ➢ Wind loading
	  ➢ Seismic loading
	  ➢ Miscellaneous loading
	  ➢ Combination of loadings
	• Design criteria
	  ➢ Limitation of deflection and drifts
	  ➢ Limitation of crack widths
	  ➢ Human comfort criteria
	• Materials
	  ➢ Timber
	  ➢ Masonry
	  ➢ Reinforced Concrete
	  ➢ Steel
	  ➢ Pre-stressed Concrete
	• Durability and Fire resistance

Structural Forms	• Gravity structural system • Lateral load resistance system
Floor Systems	• Timber framing • Reinforced Concrete Floor Systems • Steel Framing • Pre-stressed Floors Systems
Analysis	• Understanding on structural analysis theories and assumptions • Modal analysis • Static analysis • Dynamic analysis • P-Delta analysis • Axial shortening analysis • Creep, shrinkage and Temperature effects

Modeling	• Fundamental of structural analysis and mechanics of material • Basis of Finite element methods and application • Knowledge on computer programs in the analysis and design
Design	• Fundamental on structural design and detailing with different materials ➢ Timber ➢ Reinforced Concrete (including High strength concrete) ➢ Steel ➢ Pre-stressed Concrete
Concrete technology	• Ingredients of concrete and mix designs • Compliance of concrete • Quality control strategies in concrete production • High performance and high strength Concrete
Sub-Structures	• Knowledge on geotechnical Engineering and site investigation • Design and construction of various foundation types ➢ Shallow foundation ➢ Deep foundations • Durability of foundation system • Pile testing • Water retaining structure • Design & construction of basements • Different type of Earth retaining structures • Shoring systems • Dewatering
Miscellaneous	• Wind tunnel testing and Aerodynamic shaping of tall buildings • Building Facades • Precast and modular constructions • Water proofing methods • Sustainable construction

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