قسم الهندسة المدنية - مواد الامتحان التنافسي للعام الدراسي 2025-2026

الماجستير / هندسة مدنية عام

الماجستير / هندسة مدنية عام		
ت	المادة الدراسية	الدرجة
.1	مقاومة مواد	15 %
.2	خرسانة مسلحة	15 %
.3	ميكانيك التربة	15 %
.4	هندسة الاساسات	15 %
.5	منشآت هيدروليكية	15 %
.6	ادارة مشاريع	15 %
.7	تحليلات هندسية	10 %

Competitive Exam - Post-Graduate (MSc Program) – 2025-2026		
Strength of Materials- By Ferdinand L. Singer		
Chapter	**Subject**	**Remarks**
One	Simple Stress - Normal Stress - Shearing Stress - Bearing Stress - Thin-Walled Cylinders	
Two	Simple Strain - Hooke's Law: Axial Deformation - Poisson's Ratio: Biaxial And Triaxial Deformations	
Three	Ch.3 Torsion	
Four	Shear And Moment Diagram of Beams	
Five	Stress in Beams - Flexural Stress in Beams - Shear Stress in Beams - Design For Flexure And Shear	
Nine	Combined Stresses - Mohr's Circle	
Eleven	Columns - Critical Load - Long Columns By Euler's Formula	

Competitive Exam - Post-Graduate (MSc Program) – 2025-2026		
Reinforced Concrete **Design of concrete structure by Arthur H. Nilson**		
Chapter	**Subject**	**Remarks**
One & Two	Introduction- - Mechanical Properties of concrete - Concrete materials and its properties	
Three	Reinforcement details - Loading using ACI-Code. - Flexural Analysis and Design of Beams - Ultimate strength method (Introduction) - Singly Reinforced Rectangular Beams (Analysis and design) - ACI- Design requirement - Doubly Reinforced Rectangular Beams (Analysis and Design) - T-Beams (Analysis and Design)	
Four	Shear and Diagonal Tension in Beams - ACI Code Provisions for Shear Design - Design of Web Reinforcement	
Seven	Analysis and Design for Torsion - ACI-Code Provisions for Torsion design	
Eight	Design of Short Columns - Short columns subject to Axial Load and Bending	
Nine	Slender Columns	
Eleven	Indeterminate Beams - Analysis of Indeterminate Beams (Continuous Beams) - Design of Indeterminate Beams (Continuous Beams)	
Twelve	Analysis and Design of One-Way Slabs	

Competitive Exam - Post-Graduate (MSc Program) – 2025-2026		
Soil Mechanics **Principal of Geotechnical Engineering - Braja M. Das and Kh. Sobhan**		
Chapter	**Subject**	**Remarks**
Two	Origin of Soil and Grain Size - The Origin of Soil Rock-Forming Minerals, Rock and Rock Structures - Soil-Particle Size, Clay Minerals, Mechanical Analysis of Soil, Particle-Size Distribution Curve,Particle Shape	
Three	Weight–Volume Relationships - Weight–Volume Relationships, Relationships among Unit Weight, Void Ratio, Moisture Content, and Specific Gravity, and Porosity, Relative Density and e_{max} and e_{min}	
Five	Classification of Soil - Textural Classification, Classification by Engineering Behavior - AASHTO Classification System - Unified Soil Classification System	
Nine	In Situ Stresses - Stresses in Saturated Soil without Seepage, with Upward Seepage, with Downward Seepage, Seepage Force, Capillary Rise in Soils , Effective Stress in the Zone of Capillary Rise	
Eleven	Compressibility of Soil - Contact Pressure and Settlement Profile - Relations for Elastic Settlement Calculation - One-Dimensional Laboratory Consolidation Test - Void Ratio–Pressure Plots - Normally Consolidated and Overconsolidated Clays - Calculation of Settlement from One-Dimensional Primary Consolidation - Secondary Consolidation Settlement - Time Rate of Consolidation - Determination of Coefficient of Consolidation - Calculation of Consolidation Settlement under a Foundation	
Twelve	Shear Strength of Soil - Mohr–Coulomb Failure Criterion, Inclination of the Plane of Failure Caused by Shear - Laboratory Test for Determination of Shear Strength Parameters, Direct Shear Test, Drained Direct Shear Test on Saturated Sand and Clay, General Comments on Direct Shear Test - Triaxial Shear Test-General, Consolidated-Drained Triaxial Test, Consolidated-Undrained Triaxial Test, Unconsolidated-Undrained Triaxial Test, Unconfined Compression Test on Saturated Clay Sensitivity and Thixotropy of Clay	

Competitive Exam - Post-Graduate (MSc Program) – 2025-2026		
Foundation Engineering : by Braja M. Das & Nagaratnam Sivakugan		
Chapter	**Subject**	**Remarks**
Three	**Subsoil Exploration** Subsurface Exploration Program, Exploratory Borings in the Field, Procedures for Sampling Soil, Split-Spoon Sampling and Standard Penetration Test, Observation of Water Tables, Vane Shear Test, Cone Penetration Test,	
Six & Seven	**BEARING CAPACITY OF SHALLOW FOUNDATIONS** Methods of determining bearing capacity, Effect of soil compressibility, Footings with inclined or eccentric loads, Effect of water table on bearing capacity, Skempton's bearing capacity equation	
Nine	**SETTLEMENT OF BUILDINGS** Immediate settlement based on the theory of elasticity, Schmertmann's method (1978), Bjerrum's method for average settlement of layered clay soil, Primary consolidation settlement, Secondary consolidation settlement, Degree or rate of settlement	
Twelve	**Pile Foundations** Introduction, Pile Materials, Point Bearing and Friction Piles, Load Transfer Mechanism, Meyerhof's Method for Estimating Qp, Vesic's Method for Estimating Qp, Frictional Resistance (Qs) in Sand , Frictional (Skin) Resistance in Clay, Pile Load Tests , Elastic Settlement of Piles ,Negative Skin Friction, Group Piles, Group Efficiency , Ultimate Capacity of Group Piles in Saturated Clay, Elastic Settlement of Group Piles	
Sixteen	**Lateral Earth Pressure** Lateral Earth Pressure at Rest, Active Pressure, Rankine Active Earth Pressure, Coulomb's Active Earth Pressure, Passive Pressure, Rankine Passive Earth Pressure, Coulomb's Passive Earth Pressure	
Seventeen	**Retaining Walls** Gravity and Cantilever Check for Overturning, Check for Sliding Along the Base, Check for Bearing Capacity Failure	
Eighteen	**Sheet-Pile Walls** Cantilever Sheet-Pile Walls, Cantilever Sheet Piling Penetrating Sandy Soils, Cantilever Sheet Piling Penetrating Clay,	

Competitive Exam - Post-Graduate (MSc Program) – 2025-2026		
Hydraulic Structures - Subhash Kumar Garg		
Chapter	**Subject**	**Remarks**
One	Regulators - Discharge of Regulators with fully and partial opening of gate	
Two	Design of Floor - Bligh's Theory - Lane's Theory - Khosla's Theory	
Three	Transitions - Design of Warped Transition	
Four	Energy Dissipaters -Hydraulic Jump -Standard Stilling Basins	
Five	- Hydraulic Design - Culvert - Pipe and Flume Aqueduct - Siphon	
Six	Dams - Concrete Gravity Dam - Earth Dams	
Seven	Spillways -Design of Ogee Spillway	

Competitive Exam - Post-Graduate (MSc Program) – 2025-2026		
Principles of construction management- By Roy Pilcher		
Chapter	**Subject**	**Remarks**
Nine	Critical path	
Nine	PERT method	
Ten	Precedence networks	
Ten	Line of balance method	
Eleven	Cost and the networks	
Twelve	The allocation of resources	

Competitive Exam - Post-Graduate (MSc Program) – 2025-2026		
ADVANCED ENGINEERING MATHEMATICS **By C. RAY WYLIE & LOUIS C. BARRETT**		
Chapter	**Subject**	**Remarks**
One	**Ordinary Differential Equations of the First Order** - Classification of Differential Equations - Solutions of Differential Equations - Separable First-Order Equations - Homogeneous First-Order Equations - Exact First-Order Equations - Linear First-Order Equations - Special First-Order Equations - Orthogonal Trajectories	
Two	**Linear Differential Equations** - Homogeneous Second-Order Equations with Constant Coefficients - Solutions of Nonhomogeneous Equations - Nonhomogeneous Equations with Constant Coefficients - Homogeneous Equations of Higher Order - Variation of Parameters and Reduction of Order	
Four	**Simultaneous Linear Differential Equations** - Solutions, Consistency, and Equivalence of Linear Differential Systems - Fundamental Concepts and Theorems Concerning First-Order Systems - Complementary Functions and Particular Integrals of Linear Differential Systems	
Nine	**Partial Differential Equations** - Introduction - The Derivation of Equations - Characteristics and the Classification of Partial Differential Equations - Separation of Variables	