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UPSC Preliminary Examination

MORE THAN

35

YEARS OF
SOLUTIONS

1991-2026

CIVIL ENGINEERING

OBJECTIVE VOLUME - I

**Previous Years Objective Questions with Solutions,
Subjectwise & Chapterwise**

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Foreword

Dear Students,

The Stage-I (Prelims) of ESE consists of two objective papers. Paper-I is of General Studies & Engineering Aptitude. Paper-II is of Civil Engineering of 300 Marks and 3 hours duration. In stage-II (Mains), the technical syllabus is divided into two papers. The subjects included in this volume are:

1. Building Materials
2. Soil Mechanics
3. Structural Analysis
4. Design of Steel Structures
5. Design of Concrete and Masonry Structure
6. Construction Practice, Planning & Management



Keeping in view of the above topics, the present Volume-I for prelims of new pattern is redesigned using the previous questions from 1992 onwards.

The style, quality and content of the Solutions for previous ESE Questions of Civil Engineering, will encourage the reader, especially the student whether above average, average or below average to learn the concept and answer the question in the subject without any tension. However it is the reader who should confirm this and any comments and suggestions would be pleasantly received by the Academy.

It is observed that majority of ESE objective Questions are being asked as it is in many PSUs, state service commission, state electricity boards and even in GATE exam. Hence we strongly recommend all students who are competing for various competitive exams to use this book according to the syllabus of the exam concerned. This book can also be used by fresh Teachers in engineering colleges to improve their Concepts.

We proudly say that questions and solutions right from 1992 onwards are given in this book. The questions which appeared early 90's are most conceptual oriented and these are being repeated in the recent exams in a different way. Hence we advise the students to practice these questions compulsorily. The student is also advised to analyze why only a particular option is correct and why not others. Evaluate yourself, in which case, these other options are correct. With this approach you yourself can develop four questions out of one question.

The student is advised to solve the problems without referring to the solutions. The student has to analyze the given question carefully, identify the concept on which the question is framed, recall the relevant equations, find out the desired answer, verify the answer with the final key such as (a), (b), (c), (d), then go through the hints to clarify his/her answer. The student is advised to have a standard text book ready for reference to strengthen the related concepts, if necessary. The student is advised not to write the solution steps in the space around the question. By doing so, he loses an opportunity of effective revision.

With best wishes to all those who wish to go through the following pages.

Y.V. Gopala Krishna Murthy,
M Tech. MIE,
Chairman & Managing Director,
ACE Engineering Academy,
ACE Engineering Publications,
Frost Interactive Service Pvt. Ltd. (ACE ONLINE).

Syllabus for Civil Engineering

Building Materials

Stone, Lime, Glass, Plastics, Steel, FRP, Ceramics, Aluminum, Fly Ash, Basic Admixtures, Timber, Bricks and Aggregates: Classification, properties and selection criteria; Cement: Types, Composition, Properties, Uses, Specifications and various Tests; Lime & Cement Mortars and Concrete: Properties and various Tests; Design of Concrete Mixes: Proportioning of aggregate sand methods of mix design.

Solid Mechanics

Basics of strength of materials, Types of stresses and strains, Bending moments and shear force, concept of bending and shear stresses; Elastic constants, Stress, plane stress, Strains, plane strain, Mohr's circle of stress and strain, Elastic theories of failure, Principal Stresses, Bending, Shear and Torsion.

Structural Analysis

Analysis of determinate and indeterminate structures; Trusses, beams, plane frames; Rolling loads, Influence Lines, Unit load method & other methods; Free and Forced vibrations of single degree and multi degree freedom system; Suspended Cables; Concepts and use of Computer Aided Design.

Design of Steel Structures

Principles of Working Stress methods, Design of tension and compression members, Design of beams and beam column connections, built-up sections, Girders, Industrial roofs, Principles of Ultimate load design.

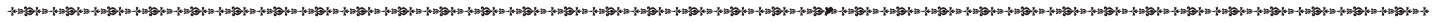
Design of Concrete and Masonry Structures

Limit state design for bending, shear, axial compression and combined forces; Design of beams, Slabs, Lintels, Foundations, Retaining walls, Tanks, Staircases; Principles of pre-stressed concrete design including materials and methods; Earthquake resistant design of structures; Design of Masonry Structure.

Construction Practice, Planning and Management

Construction - Planning, Equipment, Site investigation and Management including Estimation with latest project management tools and network analysis for different Types of works; Analysis of Rates of various types of works; Tendering Process and Contract Management, Quality Control, Productivity, Operation Cost; Land acquisition; Labour safety and welfare.

CONTENTS



Name of the Subject	Page No.
I. Building Materials	01 - 116
1. Timber.....	02 - 24
2. Bricks.....	25 - 39
3. Cement.....	40 - 61
4. Aggregates.....	62 - 70
5. Cement Mortars.....	71 - 79
6. Concrete and Reinforcement.....	80 - 108
7. Brick Masonry.....	109 - 112
8. Miscellaneous Topics.....	113 - 116
II. Solid Mechanics	117 - 360
1. Material Properties.....	118 - 128
2. Simple Stresses & Strains	129 - 168
3. Complex Stresses.....	169 - 201
4. Shear Force & Bending Moment Diagrams.....	202 - 230
5. Centroids and Moment of Inertia.....	231 - 231
6. Bending Stresses.....	232 - 253
7. Shear Stresses.....	254 - 264
8. Torsion.....	265 - 284
9. Springs.....	285 - 291
10. Thin & Thick Cylinders.....	292 - 297
11. Column.....	298 - 310
12. Deflections.....	311 - 327
13. Propped Cantilevers & Fixed Beams.....	328 - 332
14. Strain Energy.....	333 - 338
15. Shear Centre.....	339 - 342
16. Theories of Failure.....	343 - 355
17. Statics.....	356 - 360
III. Structural Analysis	361 - 532
1. Statically Determinate & Indeterminate Structures	362 - 372
2. Kinematic Indeterminacy.....	373 - 379
3. Statically Determinate Trusses.....	380 - 392
4. Basic Methods of Structural Analysis.....	393 - 395
5. Energy Principles.....	396 - 404
6. Moment Distribution Method.....	405 - 429
7. Slope Deflection Method.....	430 - 436

8. Plastic Theory.....	437 - 480
9. Rolling Loads & Influence Lines.....	481 - 500
10. Arches & Cables.....	501 - 518
11. Matrix Methods & Miscellaneous Topics.....	519 - 528
12. Structural Dynamics.....	529 - 532

IV. Design Steel Structures 533 – 624

1. Materials & Specifications	534 - 539
2. Design of Riveted & Bolted Connections.....	540 - 549
3. Design of Welded Connections.....	550 - 555
4. Design of Eccentric & Moment Connections.....	556 - 560
5. Design of Tension Members.....	561 - 570
6. Design of Compression Members.....	571 - 587
7. Design of Column Bases and Column Splices.....	588 - 590
8. Design of Beams.....	591 - 601
9. Design of Plate Girder.....	602 - 613
10. Design of Gantry Girders.....	614 - 616
11. Design of Roof Trusses.....	617 - 624

V. Reinforced Cement Concrete 625 – 750

1. General Specifications.....	626 - 636
2. Singly Reinforced Sections.....	637 - 652
3. Doubly Reinforced Sections.....	653 - 654
4. Flanged Beams.....	655 - 657
5. Shear.....	658 - 666
6. Bond.....	667 - 673
7. Torsion.....	674 - 674
8. Slabs.....	675 - 685
9. Columns.....	686 - 694
10. Footings.....	695 - 699
11. Limit State of serviceability.....	700 - 705
12. Material and Specifications.....	706 - 710
13. Analysis of Prestressed Concrete.....	711 - 721
14. Losses in Prestressed Concrete.....	722 - 725
15. Design of Prestressed Concrete.....	726 - 729
16. Retaining Walls.....	730 - 731
17. Water Tanks.....	732 - 733
18. Earth Quake Resistance Design.....	734 - 738
19. Brick Masonry.....	739 - 742
20. Miscellaneous.....	743 - 750

VI. Construction Practice, Planning & Management	751 - 847
1. Introduction.....	752 - 757
2. Elements of Network.....	758 - 767
3. PERT.....	768 - 781
4. CPM.....	782 - 791
5. CPM Cost Analysis.....	792 - 802
6. Organization.....	803 - 807
7. Depreciation and Engineering Economy.....	808 - 820
8. Construction Equipment.....	821 - 858
9. Estimation & Costing.....	859 - 863