



GOVERNMENT OF PAKISTAN MINISTRY  
OF ENERGY (POWER DIVISION)

NATIONAL ENERGY EFFICIENCY & CONSERVATION AUTHORITY (NEECA)

# **NEECA Professional Positions Syllabus for Test**

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<b>Department</b>	<b>Finance</b>
<b>Position</b>	<ul style="list-style-type: none"> <li>• Director Accounts &amp; Finance</li> <li>• Sr. AD Accounts &amp; Finance</li> <li>• AD Accounts &amp; Finance</li> </ul>
<b>Test Components</b>	<p>Mathematics &amp; Logic = 15 MCQs  English = 15 MCQs  Specialized Section = 70 MCQs  Total= 100 Marks</p>
<b>Passing Criteria</b>	Percentile Based Selection
<b>Syllabus</b>	<p><b><u>Mathematics &amp; Logic:</u></b>  This section will test the knowledge of fundamentals of interest rate, depreciation, ratio, and proportion problems. The other areas of mathematics include but not limited to mensuration, geometry, trigonometry, calculus, linear algebra, probability, and statistics, etc.  The logic section includes but not limited to propositional logic, logical reasoning, and critical thinking, relationship, and direction problems.</p> <p>Difficulty level = GMAT</p> <p><b><u>English:</u></b>  English section would comprise Grammar-in-context and Reading Comprehension.</p> <p>Grammar: Key topics</p> <ul style="list-style-type: none"> <li>- Pronoun-Antecedent Agreement</li> <li>- Subject-Verb Agreement</li> <li>- Modifiers</li> <li>- Idiomatic Expressions</li> <li>- Parallelism</li> <li>- Verb Tense</li> <li>- Modal Auxiliaries</li> <li>- Articles</li> <li>- Preposition</li> <li>- Syntax</li> </ul> <p>Grammar section would comprise multiple choice questions covering the above range of grammar topics in context. The questions would either be in the form of a close passage or sentences correction format.</p> <p>Reading Comprehension:  Level – Inferential and Critical</p> <p>Reading Comprehension section tests higher order reading skills of candidates. Questions in this section include passages (200-400 words), followed by multiple-choice questions. Texts would cover a diverse range of subject areas, written for a general audience and would not require expert knowledge.  Candidates should be able to analyze and evaluate a given text, applying various levels of comprehension. Desired skills include speed reading, reading for inference, critical evaluation of texts, and identification of author’s purpose.</p>

Difficulty level: GMAT

**Specialized:**

Accounts are Finance as subjects have an immense coverage of the topics that touch upon the various roles that personnel take in different organizations to achieve their goals. Among those topics the principle of accounting and financial reporting are the core areas of accounting and for finance, financial markets, institutions, and the financial management are the main areas. This test, while keeping in view the job descriptions of the various posts, would emphasize these topics. Nevertheless, the broader areas in accounting and finance would also be touched upon to test the general aptitude of the candidates towards these subjects. Accordingly, the MCQs are primarily taken from the following areas, but not restricted to:

**Accounting:**

- The Basic Accounting Cycle.
- Principles of Accounting.
- Accounting Equation.
- The Types of Various Accounts.
- Debit and Credit related Rules.
- Analyzing and Recording of the Transactions.
- Ledger Handling.
- Trial Balance.
- Understanding and Preparing Financial Statements.
- Financial Statement Analysis, Ratio Analysis, and their Importance.
- Limitation of the Ratio Analysis.
- Reconciliation of the Books.
- Petty Cash, Inventory and Depreciation Accounting.
- Financial Reporting Standards.

**Finance:**

- Types and Role of Financial Markets.
- The Role of Interest Rates in Valuation.
- Market Efficiency.
- Central Banking and Monetary Policy.
- The Money Markets and Bond Markets.
- The Stock Market.
- Foreign Exchange Market.
- Banking and the Management of the Financial Institutions.
- Risk Management of the Financial Institutions.
- Corporate Valuation and Stock Valuation.
- The Cost of Capital.
- Cash Distribution and Capital Structure.
- Capital Structure Decisions.
- The Global Financial Crises, The Debt Crises.
- Financial solutions for circular debt tariffs and tariffs for Energy sector
- Energy Saving Certificates
- NEECA Act
- National Electricity policy 2021
- GFR (General financial rules) 1 and 2

	<b>Books</b>
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- Accounting: The Basis for Business Decision, Meigs & Meigs, Bettner, Whittington
- Financial Management Theory and Practice, Brigham and Ehrhardt.
- Financial Markets and Institutions, Frederic S. Mishkin & Stanley G. Eakins.
- GFR (General financial rules) 1 and 2

<b>Department</b>	<b>Policy: Awareness &amp; Outreach</b>
<b>Position</b>	<ul style="list-style-type: none"> <li>• Director Awareness &amp; Outreach</li> <li>• Sr. AD Awareness &amp; Outreach</li> <li>• AD Awareness and Outreach</li> </ul>
<b>Test Components</b>	<p>Mathematics &amp; Logic = 15  English = 15  Specialized Section = 40  Case Study (Written Subjective Part) = 30  Total Marks = 100</p>
<b>Passing Criteria</b>	Percentile Based Selection
<b>Syllabus</b>	<p><b><u>Mathematics &amp; Logic:</u></b>  This section will test the knowledge of fundamentals of interest rate, depreciation, ratio, and proportion problems. The other areas of mathematics include but not limited to mensuration, geometry, trigonometry, calculus, linear algebra, probability, and statistics, etc.  The logic section includes but not limited to propositional logic, logical reasoning, and critical thinking, relationship, and direction problems.</p> <p>Difficulty level = GMAT</p> <p><b><u>English:</u></b>  English section would comprise Grammar-in-context and Reading Comprehension.</p> <p>Grammar: Key topics</p> <ul style="list-style-type: none"> <li>- Pronoun-Antecedent Agreement</li> <li>- Subject-Verb Agreement</li> <li>- Modifiers</li> <li>- Idiomatic Expressions</li> <li>- Parallelism</li> <li>- Verb Tense</li> <li>- Modal Auxiliaries</li> <li>- Articles</li> <li>- Preposition</li> <li>- Syntax</li> </ul> <p>Grammar section would comprise multiple choice questions covering the above range of grammar topics in context. The questions would either be in the form of a close passage or sentences correction format.</p> <p>Reading Comprehension:  Level – Inferential and Critical</p> <p>Reading Comprehension section tests higher order reading skills of candidates. Questions in this section include passages (200-400 words), followed by multiple-choice questions. Texts would cover a diverse range of subject areas, written for a general audience and would not require expert knowledge.  Candidates should be able to analyze and evaluate a given text, applying various levels of comprehension. Desired skills include speed reading, reading for inference, critical</p>

evaluation of texts, and identification of author's purpose.

Difficulty level: GMAT

**Specialized:**

The Specialized Section is designed to test candidates' knowledge and skills, that are aligned with the curriculum of Mass and media communication or other related disciplines. The objective is to test the candidates' knowledge, comprehension, and skills for designing, coordinating, and communicating different communication activities/campaigns for the organization to enhance its awareness, outreach, and engagement. The topics include but are not limited to the design and management of communication strategy, communication theories and models, communication sources/media, campaign planning and use of media channels, newsgathering, reporting, and public relations, etc. Examples of Successful Media Campaigns and Failed Media Campaigns, Social Media Dynamics, Content Development for different media.

The difficulty level of the questions would be graduate/master level. Social media

**Books:**

1. The dynamics of mass communication: Media in the digital age, 8<sup>th</sup> edition by Joseph R. Dominick
2. Mass Communication Theory: Foundations, Ferment and Future, 6<sup>th</sup> edition by Stanley J. Baran and Dennis K. Davis
3. Communication Models for the study of Mass Communication, 2<sup>nd</sup> edition by DENIS McQUAIL and SVEN WINDAHL

<b>Department</b>	<b>HR &amp; Support Services</b>
<b>Position</b>	<ul style="list-style-type: none"> <li>• Director Administration Services</li> <li>• AD Administration Services</li> <li>• Director HR &amp; Operations</li> <li>• Sr. AD HR &amp; Operations</li> <li>• AD HR &amp; Operations</li> </ul>
<b>Test Components</b>	<p>Mathematics &amp; Logics = 15 MCQs</p> <p>English = 15 MCQs</p> <p>Specialized Section = 40 MCQs</p> <p>Case Study (Written / Subjective Part) = 30 Marks</p>
<b>Passing Criteria</b>	Percentile Based Selection
<b>Syllabus</b>	<p><b><u>Mathematics &amp; Logic:</u></b></p> <p>This section will test the knowledge of fundamentals of interest rate, depreciation, ratio, and proportion problems. The other areas of mathematics include but not limited to mensuration, geometry, trigonometry, calculus, linear algebra, probability, and statistics, etc.</p> <p>The logic section includes but not limited to propositional logic, logical reasoning, and critical thinking, relationship, and direction problems.</p> <p>Difficulty level = GMAT</p> <p><b><u>English:</u></b></p> <p>English section would comprise Grammar-in-context and Reading Comprehension.</p> <p>Grammar: Key topics</p> <ul style="list-style-type: none"> <li>- Pronoun-Antecedent Agreement</li> <li>- Subject-Verb Agreement</li> <li>- Modifiers</li> <li>- Idiomatic Expressions</li> <li>- Parallelism</li> <li>- Verb Tense</li> <li>- Modal Auxiliaries</li> <li>- Articles</li> <li>- Preposition</li> <li>- Syntax</li> </ul> <p>Grammar section would comprise multiple choice questions covering the above range of grammar topics in context. The questions would either be in the form of a close passage or sentences correction format.</p> <p>Reading Comprehension: Level – Inferential and Critical</p> <p>Reading Comprehension section tests higher order reading skills of candidates. Questions in this section include passages (200-400 words), followed by multiple-choice questions. Texts would cover a diverse range of subject areas, written for a general audience and would not require expert knowledge.</p> <p>Candidates should be able to analyze and evaluate a given text, applying various levels</p>

of comprehension. Desired skills include speed reading, reading for inference, critical evaluation of texts, and identification of author's purpose.

Difficulty level: GMAT

**Specialized:**

Functions of human resources, operations and administration are crucial for organizations to manage their business and achieve their goals. Compared to personnel management, the HR management function is strategic in nature which places the workforce at the heart of any business function. The focus is on maximizing the potential of every employee to its maximum level to achieve competitive advantage of an organization over others. An employee's competencies such as leadership, attitudes and behaviors are the keys to an organization's success. Functions of HR such as recruitment, training, career development and compensation enable a strategic human resource framework with the help of an effective workforce.

This aptitude test will assess broader areas of HR, administration, and operation in addition to specific dimensions such as knowledge, skills and behaviors needed for the specific role for the vacancy. MCQs will assess the candidates in the areas of "functions of management" such as planning, organizing, directing controlling, and "HR functions" such as recruitment, selection, training, performance management, compensation, diversity, health and safety and work-life balance.

Knowledge of PPRA rules, rules of business - GOP, Transport Management, procurement related issues, and process automation.

**Recommended Books & Text:**

- MANAGMENT  
DAFT, RICHARD L. THE DRYDEN PRESS U.S.A 9TH EDITION.
  
- HUMAN RESOURCES MANAGEMENT  
Human Resource Management Gary Dessler and Biju Varkkey, latest edition, Pearsons.
  
- Rules of Business – Government of Pakistan
- PPRA Rules

<b>Department</b>	<b>Legal</b>
<b>Position</b>	<ul style="list-style-type: none"> <li>• Director Legal</li> <li>• AD Legal</li> </ul>
<b>Test Components</b>	<p>Mathematics &amp; Logic = 15 MCQs  English = 15 MCQs  Specialized = 40 MCQs  Case Study (Written Subject Part) = 30 Marks  Total Marks = 100</p>
<b>Passing Criteria</b>	Percentile Based Selection
<b>Syllabus</b>	<p><b><u>Mathematics &amp; Logic:</u></b>  This section will test the knowledge of fundamentals of interest rate, depreciation, ratio, and proportion problems. The other areas of mathematics include but not limited to mensuration, geometry, trigonometry, calculus, linear algebra, probability, and statistics, etc.  The logic section includes but not limited to propositional logic, logical reasoning, and critical thinking, relationship, and direction problems.</p> <p>Difficulty level = GMAT</p> <p><b><u>English:</u></b>  English section would comprise Grammar-in-context and Reading Comprehension.</p> <p>Grammar: Key topics</p> <ul style="list-style-type: none"> <li>- Pronoun-Antecedent Agreement</li> <li>- Subject-Verb Agreement</li> <li>- Modifiers</li> <li>- Idiomatic Expressions</li> <li>- Parallelism</li> <li>- Verb Tense</li> <li>- Modal Auxiliaries</li> <li>- Articles</li> <li>- Preposition</li> <li>- Syntax</li> </ul> <p>Grammar section would comprise multiple choice questions covering the above range of grammar topics in context. The questions would either be in the form of a cloze passage or sentences correction format.</p> <p>Reading Comprehension:  Level – Inferential and Critical</p> <p>Reading Comprehension section tests higher order reading skills of candidates. Questions in this section include passages (200-400 words), followed by multiple-choice questions. Texts would cover a diverse range of subject areas, written for a general audience and would not require expert knowledge.  Candidates should be able to analyze and evaluate a given text, applying various levels of comprehension. Desired skills include speed reading, reading for inference, critical evaluation of texts, and identification of author’s purpose.</p>

Difficulty level: GMAT

**Specialized:**

**Areas covered:**

- Constitution of Pakistan 1973
- Code of Civil Procedure 1908
- Code of Criminal procedure 1898
- Qanun-e-Shahadat Order 1984
- Pakistan Penal Code 1860
- Contract Act 1872
- Sale of Goods Act 1930
- Specific Relief Act 1877
- Court Fee Act 1870
- Limitation Act 1908
- Companies Act 2017
- National Energy Efficiency & Conservation Act 2016
- National Energy Conservation Policy (2006)
- Pakistan Environmental Protection Act (PEPA) 1997
- NEPRA Act
- OGRA Act
- Jurisdiction of District Courts/High Courts
- Writ Petitions
- Consumer Laws, Protection Regimes
- Consumer courts
- Establishment of Tribunals

<b>Department</b>	<b>Policy: Strategy, Policy, &amp; Regulations</b>
<b>Position</b>	<ul style="list-style-type: none"> <li>• Director Strategy, Policy, &amp; Regulations</li> <li>• Sr. AD Strategy, Policy, &amp; Regulations</li> <li>• AD Strategy, Policy, &amp; Regulations</li> </ul>
<b>Test Components</b>	<p>Mathematics &amp; Logic = 15  English = 15  Specialized Section = 40  Case Study (Written Subjective Part) = 30  Total Marks = 100</p>
<b>Passing Criteria</b>	Percentile Based Selection
<b>Syllabus</b>	<p><b><u>Mathematics &amp; Logic:</u></b>  This section will test the knowledge of fundamentals of interest rate, depreciation, ratio, and proportion problems. The other areas of mathematics include but not limited to mensuration, geometry, trigonometry, calculus, linear algebra, probability, and statistics, etc.  The logic section includes but not limited to propositional logic, logical reasoning, and critical thinking, relationship, and direction problems.</p> <p>Difficulty level = GMAT</p> <p><b><u>English:</u></b>  English section would comprise Grammar-in-context and Reading Comprehension.</p> <p>Grammar: Key topics</p> <ul style="list-style-type: none"> <li>- Pronoun-Antecedent Agreement</li> <li>- Subject-Verb Agreement</li> <li>- Modifiers</li> <li>- Idiomatic Expressions</li> <li>- Parallelism</li> <li>- Verb Tense</li> <li>- Modal Auxiliaries</li> <li>- Articles</li> <li>- Preposition</li> <li>- Syntax</li> </ul> <p>Grammar section would comprise multiple choice questions covering the above range of grammar topics in context. The questions would either be in the form of a cloze passage or sentences correction format.</p> <p>Reading Comprehension:  Level – Inferential and Critical</p> <p>Reading Comprehension section tests higher order reading skills of candidates. Questions in this section include passages (200-400 words), followed by multiple-choice questions. Texts would cover a diverse range of subject areas, written for a general audience and would not require expert knowledge.  Candidates should be able to analyze and evaluate a given text, applying various levels of comprehension. Desired skills include speed reading, reading for inference, critical</p>

evaluation of texts, and identification of author's purpose.

Difficulty level: GMAT

**Specialized:**

- Policies & Strategies related to Federal and Provincial Energy Policies
- Climate change (Adaptation and Mitigation Policies)
- Constitutions of Pakistan
- Policy & Strategy
- Oil & Gas tariffs
- Energy Mix of Pakistan
- Major Issues in Pakistan's Energy Sector
- Circular Debt
- Public Sector Development Programs
- Power Sector Tariffs
- National Conservation Policy 2006
- Pakistan Energy Year Book 2019
- National Electricity Policy 2021
- Alternative Energy Policy 2019
- Climate Change Policy 2013
- Energy and conservation policies
- NEECA Strategic Plans
- Energy Efficiency
- Sustainable goal
- International Energy
- Energy and Society
- Energy Resources and Technologies
- Energy Security and Energy Transitions
- Energy Investment and Divestment Trends

**Recommended Books:**

- Silva, S. da, & Dias, G. (2020). Energy Efficiency in Developing Countries: Policies and Programmes . Routledge.
- Sovacool, B. K., Brown, M. A., & Valentine, S. v. (2016). Fact and Fiction in Global Energy Policy: Fifteen Contentious Questions. JHU Press.

**Other Resources that might be helpful**

- Barbier, E. B. (2020). Is green rural transformation possible in developing countries? *World Development*, 131, 104955.
- Economidou, M., Todeschi, V., Bertoldi, P., D'Agostino, D., Zangheri, P., & Castellazzi, L. (2020). Review of 50 years of EU energy efficiency policies for buildings. *Energy and Buildings*, 225, 110322.
- Jain, P., & Goswami, B. (2021). Energy efficiency in South Asia: Trends and determinants. *Energy*, 221, 119762.
- Nhamo, G., Nhemachena, C., Nhamo, S., Mjimba, V., & Savić, I. (2020). Projecting Progress and Challenges to Accelerating the Achievement of SDG 7 in South Asia. In *SDG7 – Ensure Access to Affordable, Reliable, Sustainable and Modern Energy* (pp. 143–174). Emerald Publishing Limited.
- Popkova, E. G., & Sergi, B. S. (2021). Energy efficiency in leading emerging and developed countries. *Energy*, 221, 119730.  
<https://doi.org/10.1016/j.energy.2020.119730>

<b>Department</b>	<b>Technical</b>
<b>Positions</b>	<ul style="list-style-type: none"> <li>AD Industry</li> </ul>
<b>Test Components</b>	<p>Mathematics &amp; Analytical Skills: 15  English: 15  Specialized Section: 70  Total Marks: 100</p>
<b>Passing Criteria</b>	Percentile Based Selection
<b>Syllabus</b>	<p><b><u>Mathematics &amp; Logic:</u></b>  This section will test the fundamental knowledge of mechanics, integral and differential calculus, geometry, trigonometry, linear algebra, probability and statistics, mensuration (with measurement of surfaces), ratio and proportion.  The logic section includes but not limited to propositional logic, logical reasoning, and critical thinking, relationship, and direction problems.</p> <p>Difficulty level = GRE</p> <p><b><u>English:</u></b>  English section would comprise Grammar-in-context and Reading Comprehension.</p> <p>Grammar: Key topics</p> <ul style="list-style-type: none"> <li>- Pronoun-Antecedent Agreement</li> <li>- Subject-Verb Agreement</li> <li>- Modifiers</li> <li>- Idiomatic Expressions</li> <li>- Parallelism</li> <li>- Verb Tense</li> <li>- Modal Auxiliaries</li> <li>- Articles</li> <li>- Preposition</li> <li>- Syntax</li> </ul> <p>Grammar section would comprise multiple choice questions covering the above range of grammar topics in context. The questions would either be in the form of a cloze passage or sentences correction format.</p> <p>Reading Comprehension:  Level – Inferential and Critical</p> <p>Reading Comprehension section tests higher order reading skills of candidates. Questions in this section include passages (200-400 words), followed by multiple-choice questions. Texts would cover a diverse range of subject areas, written for a general audience and would not require expert knowledge.  Candidates should be able to analyze and evaluate a given text, applying various levels of comprehension. Desired skills include speed reading, reading for inference, critical evaluation of texts, and identification of author’s purpose.</p> <p>Difficulty level: GMAT</p>

**Specialized:**

Fundamentals of transportation, agriculture, industry, building, urban, mobility & vehicles, thermal, electrical and urban planning, Energy Conservation Building Codes (ECBC), Overview of National Energy Efficiency and Conservation Authority (NEECA), understanding of energy efficiency labels and standards, Overview of PSQCA act 1996, Equipment used in agriculture system.

Electricity Bill Analysis, Electrical Distribution Systems, Electrical System Survey Instruments, Electric Motors, Pumps, Fans and Blowers, Cooling Towers, Heating, Ventilating and Air Conditioning Systems, Financial Analysis of electrical systems, Conducting Energy Audit of electrical systems, Energy Management Standards-ISO.

Boilers, Fuel combustion and efficiency, Reducing the Losses Affecting Efficiency, Efficiency Calculations, Boiler Instrumentation and controls, Water treatment, Boiler Heat Recovery Systems, Performance Monitoring and Environmental Pollution Aspect of steam boilers including NEQS-Pakistan  
Centrifugal pump, Instruments and equipment for the tube-well energy audits, Audit methodology, best practices for energy efficient irrigation and tractor fuel efficiency

Fundamentals of thermodynamics, Cogeneration system, Equipment for cogeneration, financial consideration and costing in cogeneration, Cogeneration, potential and impediments, case studies.

Engineering units and basic principles, Psychometry, Refrigerants, Refrigeration Cycles, Refrigeration prime movers, Refrigeration systems and equipment, Instrumentation and controls, Systems applications, Operation and Maintenance practices, Energy Conservation Opportunities in Refrigeration and Airconditioning system.

**References**

- Thermodynamics: An Engineering Approach, Yunus A. Cengel, Michael A, McGraw-Hill
- Refrigeration and Air conditioning, ENERCON
- Energy-Efficiency Labels and Standards: A Guidebook for Appliances, Equipment, and
- Lighting - 2nd Edition, Wiel, Stephen, McMahan, James E.
- Improving Steam Boiler Operating Efficiency, ENERCON
- PSQCA Act 1996
- Applied Thermodynamics and Engineering, T. D. Eastop and A. McConkey, Pearson
- Cogeneration, ENERCON
- Electrical Power Technology 6th Edition by Theodore Wildi. Prentice Hall.
- Electric Machinery Fundamentals 4th Edition, P. S. Chapman McGraw
- Heat and mass transfer, J.P. Holman
- Improving Energy Efficiency in Electrical Systems, ENERCON
- Workshop Practice: Written by W.A. J. Chapman
- Energy Auditor scheme Handbook, ANSI accredited
- Tubewell Energy Audit Manual, ENERCON
- Sustainable Water Resources Management by Chandra S. P. Ojha, Rao Y. Surampalli, András Bárdossy, Tian C. Zhang, Chih-Ming Kao
- Textbook of Irrigation and Water Management by V.A. Rajemahadik, V.G. Chavan

<b>Department</b>	<b>Technical</b>
<b>Positions</b>	<ul style="list-style-type: none"> <li>• Director Civil &amp; Urban Planning</li> <li>• Director Electrical</li> <li>• Director Industry</li> <li>• Director Mobility &amp; Vehicles</li> <li>• Director Power &amp; Energy</li> <li>• Director Residential &amp; Buildings</li> <li>• Director Services &amp; Agriculture</li> <li>• Director Thermal</li> <li>• Director Transportation</li> </ul>
<b>Test Components</b>	<p>Mathematics &amp; Analytical Skills: 15  English: 15  Specialized Section: 40  Case Study (Written / Subjective Part): 30 Marks</p>
<b>Passing Criteria</b>	Percentile Based Selection
<b>Syllabus</b>	<p><b><u>Mathematics &amp; Logic:</u></b>  This section will test the fundamental knowledge of mechanics, integral and differential calculus, geometry, trigonometry, linear algebra, probability and statistics, mensuration (with measurement of surfaces), ratio and proportion.  The logic section includes but not limited to propositional logic, logical reasoning, and critical thinking, relationship, and direction problems.</p> <p>Difficulty level = GRE</p> <p><b><u>English:</u></b>  English section would comprise Grammar-in-context and Reading Comprehension.</p> <p>Grammar: Key topics</p> <ul style="list-style-type: none"> <li>- Pronoun-Antecedent Agreement</li> <li>- Subject-Verb Agreement</li> <li>- Modifiers</li> <li>- Idiomatic Expressions</li> <li>- Parallelism</li> <li>- Verb Tense</li> <li>- Modal Auxiliaries</li> <li>- Articles</li> <li>- Preposition</li> <li>- Syntax</li> </ul> <p>Grammar section would comprise multiple choice questions covering the above range of grammar topics in context. The questions would either be in the form of a cloze passage or sentences correction format.</p> <p>Reading Comprehension:  Level – Inferential and Critical</p> <p>Reading Comprehension section tests higher order reading skills of candidates.</p>

Questions in this section include passages (200-400 words), followed by multiple-choice questions. Texts would cover a diverse range of subject areas, written for a general audience and would not require expert knowledge. Candidates should be able to analyze and evaluate a given text, applying various levels of comprehension. Desired skills include speed reading, reading for inference, critical evaluation of texts, and identification of author's purpose.

Difficulty level: GMAT

**Specialized:**

Fundamentals of transportation, agriculture, industry, building, urban, mobility & vehicles, thermal, electrical and urban planning, Energy Conservation Building Codes (ECBC), Overview of National Energy Efficiency and Conservation Authority (NEECA), understanding of energy efficiency labels and standards, Overview of PSQCA act 1996, Equipment used in agriculture system.

Electricity Bill Analysis, Electrical Distribution Systems, Electrical System Survey Instruments, Electric Motors, Pumps, Fans and Blowers, Cooling Towers, Heating, Ventilating and Air Conditioning Systems, Financial Analysis of electrical systems, Conducting Energy Audit of electrical systems, Energy Management Standards-ISO.

Boilers, Fuel combustion and efficiency, Reducing the Losses Affecting Efficiency, Efficiency Calculations, Boiler Instrumentation and controls, Water treatment, Boiler Heat Recovery Systems, Performance Monitoring and Environmental Pollution Aspect of steam boilers including NEQS-Pakistan

Centrifugal pump, Instruments and equipment for the tube-well energy audits, Audit methodology, best practices for energy efficient irrigation and tractor fuel efficiency

Fundamentals of thermodynamics, Cogeneration system, Equipment for cogeneration, financial consideration and costing in cogeneration, Cogeneration, potential and impediments, case studies.

Engineering units and basic principles, Psychometry, Refrigerants, Refrigeration Cycles, Refrigeration prime movers, Refrigeration systems and equipment, Instrumentation and controls, Systems applications, Operation and Maintenance practices, Energy Conservation Opportunities in Refrigeration and Airconditioning system.

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- Lighting - 2nd Edition, Wiel, Stephen, McMahan, James E.
- Improving Steam Boiler Operating Efficiency, ENERCON
- PSQCA Act 1996
- Applied Thermodynamics and Engineering, T. D. Eastop and A. McConkey, Pearson
- Cogeneration, ENERCON
- Electrical Power Technology 6th Edition by Theodore Wildi. Prentice Hall.
- Electric Machinery Fundamentals 4th Edition, PBy S. Chapman McGraw
- Heat and mass transfer, J.P. Holman

	<ul style="list-style-type: none"><li>- Improving Energy Efficiency in Electrical Systems, ENERCON</li><li>- Workshop Practice: Written by WA. J Chapman</li><li>- Energy Auditor scheme Handbook, ANSI accredited</li><li>- Tubewell Energy Audit Manual, ENERCON</li><li>- Sustainable Water Resources Management by Chandra S. P. Ojha, Rao Y. Surampalli, András Bárdossy, Tian C. Zhang, Chih-Ming Kao</li><li>- Textbook of Irrigation and Water Management by V.A. Rajemahadik, V.G. Chavan</li></ul>
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<b>Department</b>	IT
<b>Position</b>	<ul style="list-style-type: none"> <li>• Director IT Network Infrastructure</li> <li>• AD IT Network Infrastructure</li> </ul>
<b>Test Components</b>	<p>Mathematics &amp; Logics = 15 MCQs  English = 15 MCQs  Specialized Section= 70 MCQs  Total = 100 Marks / MCQs</p>
<b>Syllabus</b>	<p><b><u>Mathematics &amp; Logic:</u></b>  This section will test the fundamental knowledge of mechanics, integral and differential calculus, geometry, trigonometry, linear algebra, probability and statistics, mensuration (with measurement of surfaces), ratio and proportion. The logic section includes but not limited to propositional logic, logical reasoning, and critical thinking, relationship, and direction problems.</p> <p>Difficulty level = GRE</p> <p><b><u>English:</u></b>  English section would comprise Grammar-in-context and Reading Comprehension.</p> <p>Grammar: Key topics</p> <ul style="list-style-type: none"> <li>- Pronoun-Antecedent Agreement</li> <li>- Subject-Verb Agreement</li> <li>- Modifiers</li> <li>- Idiomatic Expressions</li> <li>- Parallelism</li> <li>- Verb Tense</li> <li>- Modal Auxiliaries</li> <li>- Articles</li> <li>- Preposition</li> <li>- Syntax</li> </ul> <p>Grammar section would comprise multiple choice questions covering the above range of grammar topics in context. The questions would either be in the form of a cloze passage or sentences correction format.</p> <p>Reading Comprehension:  Level – Inferential and Critical</p> <p>Reading Comprehension section tests higher order reading skills of candidates. Questions in this section include passages (200-400 words), followed by multiple-choice questions. Texts would cover a diverse range of subject areas, written for a general audience and would not require expert knowledge. Candidates should be able to analyze and evaluate a given text, applying various levels of comprehension. Desired skills include speed reading, reading for inference, critical evaluation of texts, and identification of author’s purpose.</p> <p>Difficulty level: GMAT</p> <p><b><u>Specialized:</u></b>  Candidates must have thorough understanding of the techniques, applications and control of modern communication networks and technologies such as TCP/IP, DNS,</p>

DHCP, NAT, TCP, UDP etc. Topics included are error detection and correction, multiple-access, bandwidth allocation, internetworking, reliability and flow control and alternate routing strategies and algorithms. Basic concepts of Secrecy, Integrity, Availability, Authenticity, Non-repudiation, Access control & Network Security Issues and protocols.

- Network Infrastructure
- Routers and Switches
- Internet Protocols
- Network Standards
- Cloud based technologies
- Data Centers
- Essential Security Techniques
- Troubleshooting of Networks and Hardware issues
- Internet Bandwidth and best practices
- Backup Methodologies & Techniques

**Books:**

- Data Communications & Networking By Behroz A Fourozan
- Cryptography & Network Security By William Stallings
- Cloud Computing: SaaS, PaaS, IaaS, Virtualization, Business Models, Mobile, Security and more By Kris Jamsa
- Online Resource: <https://cloudian.com/guides/data-backup/data-backup-in-depth/>

<b>Department</b>	IT
<b>Position</b>	<ul style="list-style-type: none"> <li>• Director IT Support, Applications, Web &amp; Social Media</li> <li>• AD IT Applications, Web &amp; Social Media</li> </ul>
<b>Test Components</b>	<p>Mathematics &amp; Logics = 15 MCQs  English = 15 MCQs  Specialized Section= 70 MCQs  Total = 100 Marks / MCQs</p>
<b>Syllabus</b>	<p><b><u>Mathematics &amp; Logic:</u></b>  This section will test the fundamental knowledge of mechanics, integral and differential calculus, geometry, trigonometry, linear algebra, probability and statistics, mensuration (with measurement of surfaces), ratio and proportion. The logic section includes but not limited to propositional logic, logical reasoning, and critical thinking, relationship, and direction problems.</p> <p>Difficulty level = GRE</p> <p><b><u>English:</u></b>  English section would comprise Grammar-in-context and Reading Comprehension.</p> <p>Grammar: Key topics</p> <ul style="list-style-type: none"> <li>- Pronoun-Antecedent Agreement</li> <li>- Subject-Verb Agreement</li> <li>- Modifiers</li> <li>- Idiomatic Expressions</li> <li>- Parallelism</li> <li>- Verb Tense</li> <li>- Modal Auxiliaries</li> <li>- Articles</li> <li>- Preposition</li> <li>- Syntax</li> </ul> <p>Grammar section would comprise multiple choice questions covering the above range of grammar topics in context. The questions would either be in the form of a cloze passage or sentences correction format.</p> <p>Reading Comprehension:  Level – Inferential and Critical</p> <p>Reading Comprehension section tests higher order reading skills of candidates. Questions in this section include passages (200-400 words), followed by multiple-choice questions. Texts would cover a diverse range of subject areas, written for a general audience and would not require expert knowledge. Candidates should be able to analyze and evaluate a given text, applying various levels of comprehension. Desired skills include speed reading, reading for inference, critical evaluation of texts, and identification of author’s purpose.</p> <p>Difficulty level: GMAT</p> <p><b><u>Specialized:</u></b>  What is an information system? What are its management, organization, and technology components? Why are complementary assets essential for ensuring</p>

that information systems provide genuine value for organizations? Why are systems for collaboration and social business so important, and what technologies do they use? Threats and attacks of Social Engineering. Knowledge of Internet of Things (IOT), Designing of Mobile / Application Development, Artificial Intelligence (AI), Data Mining, Data Migration & Integration.

- Software Testing Methodologies
- Project Management
- Architectural design in software engineering
- Databases
- ERPs
- Business Intelligence
- Block chain Technologies and Cryptography methods
- Data Science, Machine Learning
- Security Protocols using Software Development

**Books:**

- Management Information Systems By Laudon & Laudon
- Artificial Intelligence: A Modern Approach by Stuart J. Russell and Peter Norvig.
- Data Mining: Practical Machine Learning Tools and Techniques by Mark A. Hall, Ian H. Witten, Eibe Frank, Christopher Pal
- Software Engineering by Roger S. Pressman
- Patterns of Enterprise Application Architecture by Martin Fowler
- Foundations of Software Testing by Rex Black

<b>Department</b>	Policy: Enrollment, Testing & Assessment
<b>Position</b>	<ul style="list-style-type: none"> <li>• Director Enrollment, Testing &amp; Assessment</li> <li>• Sr.AD Enrollment, Testing and Assessment</li> <li>• AD Enrollment, Testing and Assessment</li> </ul>
<b>Test Components</b>	<p>Mathematics &amp; Logics: 25 MCQS  English = 25 MCQs  Specialized Section = 30 MCQs  Case Study (Written Subject Part)= 20 Marks  Total Marks = 100</p>
<b>Syllabus</b>	<p>The questions assess applicants' broad knowledge in the following domains: General management concepts, Public administration, and Energy related matters. The second section is a case study and related descriptive questions. This case would provide a scenario/issue where the candidate is expected to use his/her knowledge of management, public administration, and of the energy sector in order to come up with practicable answers.</p> <p>The topics covered in the above-mentioned domains are usually found in courses in management and public administration. A few references are provided below. Thus, in the management area, broad concepts of planning, organizing, leading and controlling are required. Similarly, in public administration, concepts such as bureaucracy, public policy, government's relation to business, and accountability are part and parcel of their curriculum. The candidate is expected to be well versed with these concepts and also have a fair idea of what is the significance of these for different types of organizations, whether working in the public sector, private sector or as a non-governmental organization.</p> <p>The candidate is also expected to have a fair understanding of the energy sector at the global level and especially of the local Pakistani context. This includes the types of energy sources being used, alternatives being explored, main issues with the existing sources and system and possibility of innovative solutions to these issues.</p> <p>In addition, the test syllabus also includes knowledge of developing instructional material for energy efficiency and conservation auditors. This includes knowledge on how to develop and supervise syllabus, preparation of relevant assessment tools, and scheduling and conduct of tests for the position of energy auditor/managers.</p> <p><b>Reference Books/Sites:</b>  For Management: Bateman, T., &amp; Snell, S. (2019). Management: Leading &amp; Collaborating in Competitive World, (13 ed.): McGraw Hill.  For Public Administration: Johnson, W. C. (2014). Public administration: Partnerships in public service: Waveland Press.</p> <p><b>For Energy Sector information:</b>  <a href="https://www.iea.org/">https://www.iea.org/</a>  <a href="https://www.nepra.org.pk/">https://www.nepra.org.pk/</a>  <a href="https://neeca.gov.pk/">https://neeca.gov.pk/</a></p>

