

THE NATIONAL COUNCIL OF EXAMINERS FOR ENGINEERING AND SURVEYING
PRINCIPLES AND PRACTICE OF ENGINEERING EXAMINATION

ELECTRICAL AND COMPUTER
(Depth—Power)

EFFECTIVE October 2005

The electrical and computer engineering examination is a breadth and depth examination. This means that **all** examinees work the breadth (AM) exam and **one** of the three depth (PM) exams. The breadth exam contains questions from the general field of electrical and computer engineering. The depth exams focus more closely on a single area of practice in electrical and computer engineering. The three depth examinations are Computers; Electronics, Controls, and Communications; and Power.

Power Depth Module (PM)	Approximate Percentage of Examination
I. General Power Engineering	15%
A. Measurement, Instrumentation, and Statistics	5%
1. Instrument Transformers	
2. Reliability	
3. Wattmeters	
B. Special Applications	2%
1. Illumination Design	
2. Lightning and Surge Protection	
C. Codes and Standards	8%
1. NEC (code)	
2. NESC (code)	
II. Circuit Analysis	28%
A. Analysis	15%
1. Three-Phase Circuit Analysis	
2. Symmetrical Components	
3. Per Unit Analysis	
B. Devices and Power Electronic Circuits	8%
1. Battery Characteristics and Ratings	
2. Power Supplies	
3. Relays and Switches	
4. Variable-Speed Drives	
C. Electric and Magnetic Fields and Applications	5%
1. Transmission Line Models	
2. Electromagnetic Fields, Coupling, and Interference	
3. Electrostatics	

Power Depth Module (PM)	Approximate Percentage of Examination
III. Rotating Machines and Electromagnetic Devices	27%
A. Rotating Machines	18%
1. Synchronous Machines	
2. Induction Machines	
3. DC Machines	
4. Nameplate Data	
5. Equivalent Circuits	
6. Speed-Torque Characteristics	
7. Speed Control	
8. Motor Starting	
B. Electromagnetic Devices	9%
1. Transformers	
2. Reactors	
3. Testing	
IV. Transmission and Distribution	30%
A. System Analysis	15%
1. Voltage Drop	
2. Voltage Regulation	
3. Power Factor Correction	
4. Power Quality	
5. Fault Current Analysis	
6. Grounding	
7. Resistance Grounding	
8. Transformer Connections	
B. Power System Performance	6%
1. Load Flow	
2. Models	
3. Power System Stability	
C. Protection	9%
1. Overcurrent Protection	
2. Protective Relaying	
3. Protective Devices	
4. Coordination	
TOTAL	100%

NOTES

1. The knowledge areas specified under A, B, C, ... etc., are examples of kinds of knowledge, but they are not exclusive or exhaustive categories.
2. Each depth (PM) exam contains 40 multiple-choice questions. Examinee chooses **one** depth exam and works all questions in the depth exam chosen.