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

ELECTRICAL AND COMPUTER (Breadth)

EFFECTIVE April 2002

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.

Breadth Module (AM)

Approximate Percentage of Examination

I. Basic Electrical Engineering **45%**

A. Professionalism and Engineering Economics 6%

1. Engineering Economics
2. Ethics
3. Professional Practice

B. Safety and Reliability 6%

1. Reliability
2. Electric Shock and Burns
3. General Public Safety

C. Electric Circuits 24%

1. Ohm's Law
2. Coulomb's Law
3. Faraday's Law
4. Kirchhoff's Laws
5. Thevenin's Theorem
6. Norton's Theorem
7. Superposition
8. Source Transformation
9. Sinusoidal Steady State Analysis
10. Power and Energy Calculations
11. Transient Analysis
12. Fourier Analysis
13. Transfer Functions
14. Complex Impedance
15. Laplace Transforms
16. Mutual Inductance

D. Electric and Magnetic Field Theory and Applications 3%

1. Electrostatic Effects
2. Magnetostatic Fields

		Approximate Percentage of Examination
E.	Digital Logic	6%
1.	Digital Logic	
II.	**Electronics, Electronic Circuits and Components**	**20%**
A.	Components	14%
1.	Solid State Device Characteristics and Ratings	
2.	Operational Amplifiers	
3.	Transistors	
4.	Signal Grounding	
5.	Transducers/Sensors	
B.	Electrical and Electronic Materials	6%
1.	Conductivity/Resistivity	
2.	Thermal Characteristics	
3.	Semiconductors	
III.	**Controls and Communications Systems**	**15%**
A.	Controls and Communications Systems	
1.	System Stability	
2.	Frequency Response	
3.	Analog Modulation	
4.	Frequency Selective Filters	
IV.	**Power**	**20%**
A.	Transmission and Distribution	12%
1.	Voltage Regulation	
2.	Power Factor Correction	
3.	Grounding	
B.	Rotating Machines and Electromagnetic Devices	8%
1.	AC and DC Machines	
2.	Transformers	
	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. The breadth (AM) exam contains 40 multiple-choice questions. Examinee works all questions.