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

ELECTRICAL AND COMPUTER (Depth—Computers)

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.

Computers Depth Module (PM)	**Approximate Percentage of Examination**
I. General Computer Systems	**10%**
A. Interpretation of Codes and Standards	4%
1. IEEE Standards	
2. ISO Standards	
3. Safety and Compatibility Standards	
4. Protocol/Interface Standards	
B. Microprocessor Systems	6%
1. Number Systems and Codes	
2. Systems and Applications	
II. Hardware	**45%**
A. Digital Electronics	16%
1. Memory Devices	
2. Standard Modular Devices	
3. Programmable Logic	
4. Tristate Logic	
5. Digital Electronic Devices	
6. Logic Components	
7. VLSI Circuits	
8. Analog-to-Digital and Digital-to-Analog Conversion	
B. Design and Analysis	19%
1. Clock Generation/Distribution	
2. Memory Interface	
3. Processor Interfacing	
4. Metastability	
5. Races and Hazards	
6. Timing Diagrams	
7. Synchronous-State Machines	
8. Asynchronous Circuits	
9. Circuit Pipelining	
10. Testability	
11. Design Methodology	

Computers Depth Module (PM)	**Approximate Percentage of Examination**
C. Systems	10%
1. Computer Architecture	
2. Special-Purpose Architecture	
3. Arithmetic Hardware	
4. Memory Systems	
5. Hardware Fault Tolerance	
6. System Performance	
III. Software	**35%**
A. System Software	12%
1. Operating Systems	
2. Real-Time Operating Systems	
3. Computer Security	
4. Drivers	
B. Development/Applications	23%
1. Software Lifecycle	
2. Software Design Methods	
3. Software Documentation	
4. Software Fault Tolerance	
5. Performance Enhancement	
6. Data Structures	
7. Algorithms	
8. Complexity	
9. Database Schemas	
10. Program Control Structures	
11. Programming Language Characteristics	
12. Development Tools	
IV. Networks	**10%**
A. Networks	
1. Protocols	
2. Computer Networks	
3. Physical Layer	
4. Information Theory	
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.