



11th Nov 2025, 14:30–15:45

Full Name : _____ Student ID: _____

Grade Table (for Lecturer use only)

Question	Points	Score
1	10	
2	20	
3	20	
4	20	
5	20	
6	20	
Total:	110	

Instructions for Midterm Exam

Welcome to the midterm exam of EEE113 - Introduction to Electrical Engineering and good luck! Please read the following rules and confirm by signing that you have read and understood the rules before you receive your exam:

1. The midterm exam shall be conducted between 14:30 and 15:45. Exam duration is 75 minutes. Students must finalise the exam by delivering it before 15:45. Students are not allowed to leave the exam in the first 30 minutes.
2. Student ID cards shall visibly be on the edge of desks till the end of the exam. Students without the student ID cards or Turkish identity cards shall not be participated into the exam.
3. This is a closed-book exam which means that students are not allowed to take notes, books, or any other reference material into the exam. Throughout the exam, students shall not possess mobile phones and electronic devices that are capable of storing, receiving, or transmitting information or electronic signals, such as computerised watches.
4. Students are not allowed to take a glance at the exam questions until told to do so. Students shall not communicate with any other student under any circumstances during the exam period. A student, who cheats, tries to cheat during the exam, or is identified to be cheating after investigating exam documents, is given 0 (zero) for that exam and a disciplinary investigation is opened against the student.
5. All numerical values in the exam shall be calculated according to two decimal digits. Otherwise, there will be a penalty.
6. An incorrect answer to a question is awarded no marks with no consideration of any partial credit. Therefore, no partial credit will be given.

In recognition of and in the spirit of the above rules, I certify that I will neither give nor receive unpermitted aid on this examination.

Signature: _____

1. **(10 points)** In a textile factory, the Production Manager asks the Electrical Engineer to bypass safety sensors on a carding machine to avoid production delays. Which action best follows professional engineering ethics?

- ☐ Bypass the sensors to maintain production efficiency.
☐ Refuse and report the request to prioritise human safety and ethical standards.

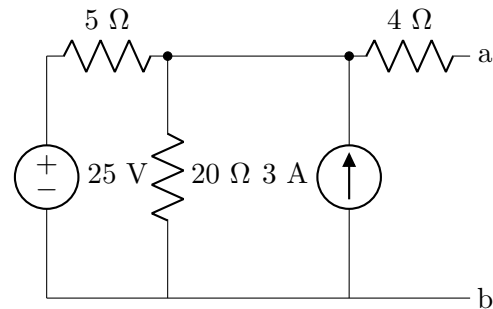


2. **(20 points)** Charles DuFay demonstrated that electric charges either attract or _____ each other. In 1820, Hans Christian Oersted announced a relationship between magnetism and electricity that serves as the foundation for the theory of _____ as we know it today. In the same year, André Ampère demonstrated that there are magnetic effects around every _____ conductor and those conductors can behave just like magnets. In 1904, John Ambrose Fleming developed the first _____ commonly called Fleming's valve, the first electronic device in history. In 1947, physicists William Shockley, John Bardeen, and Walter H. Brattain of Bell Telephone Laboratories demonstrated the point-contact _____, an amplifier constructed entirely of solid-state materials with no requirement for a vacuum, glass envelope, or heater voltage for the filament.

3. **(20 points)** Pick the appropriate option.

<u>Feature</u>	<u>Compiler</u>	<u>Interpreter</u>
Translation	Line/Entire	Line/Entire
Speed	Slower/Faster	Slower/Faster
Memory	Lower/Higher	Lower/Higher
Example	C/Python	C/Python

4. **(20 points)** Find the Thévenin equivalent circuit between the terminals a and b.



5. **(20 points)** If the function F is given as $F = (x + y + z)(x + y + z')(x' + y' + z)(x' + y' + z')$, simplify F to a minimum number of literals and then draw the logic diagram.

Hint: Let $A = x + y$ and $B = x' + y'$.

6. **(20 points)** Find the mesh currents in the clockwise direction.

