Name: _____ Roll No: _____

B. Tech. (Electrical and Electronics Engineering): semester II

World of Electrical and Electronics Engineers (EEE100)

Mid Term Exam (Winter Sem: 2025-26) Marks: 30, Weight: 30%

February21, 2026, Saturday: 5PM- 6:15PM

Instructions:

1. All questions are compulsory. Your answers should be to the point and concise.
2. Maximum marks assigned to each question is mentioned in the bracket.
3. All acronyms carry usual meaning.
4. Copying is strictly prohibited.

Question 1: Compare the Semiconductor Based Transistors/devices with Vacuum Tube based devices. (2)

Question 2: Compare briefly PCB with "Integrated Circuit" with reference to electronic circuit design. (2)

Question 3: Name any one individual who has been awarded the Nobel Prize in Physics for the contribution in the domain of Electronics. Briefly describe the contribution(s). (2)

Question 4: State and explain Coulomb's Law. (1)

Question 5: State Faraday's law of Electromagnetic Induction with mathematical expression. (2)

Question 6: State and explain any one of Maxwell's Equations of Electromagnetics. (2)

Question 7: Describe briefly any one significant invention by Thomas Edison in the domain of Electromagnetism. (2)

Question 8: Define an ideal voltage source and ideal current source. How do you achieve that? (2)

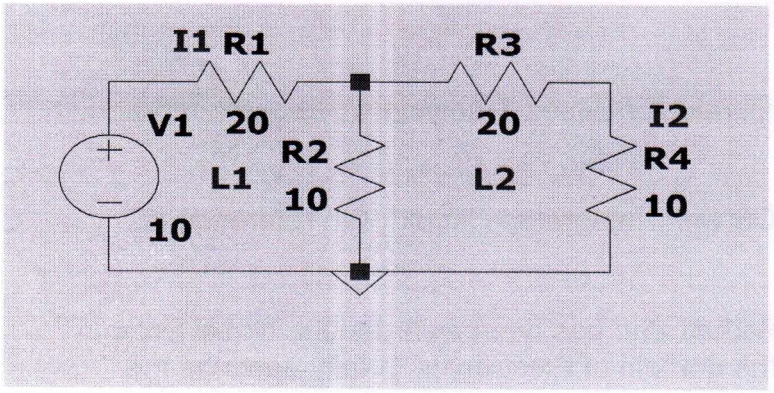
Question 8: Two identical small conducting spheres are separated by a distance of 1 metre. The spheres originally have equal and opposite charges and the force between them is F_0. Half of the charge on one sphere is then moved to the other sphere. The force between the spheres is now- (4)

(a) F_0
(b) $F_0/2$
(c) $F_0/4$
(d) $3F_0/2$
(e) None of the above

Question9: Using Gauss Law, find the electric field due to charge Q at distance R. (3)

Question10: What does VLSI stand for? What is the level of components integration (number) in VLSI generally? (2)

Question 11. In the circuit below, current I1 is flowing clockwise through R1 and current I2 is flowing clockwise through R4. Write KVL equations for loop L1 and L2. Resistance values are in Ohms and Battery voltage is in volt. (3)



Question 12. The circuit below has an AC voltage source V= 20 Sin 628t. Given R=10 Ohm. Calculate the total power absorbed the resistance in 10 seconds. (3)

