

COMBINED FIRST AND SECOND SEMESTER B.TECH (ENGINEERING) DEGREE EXAMINATION

EN14107 – BASICS OF ELECTRICAL ELECTRONICS AND COMMUNICATION ENGINEERING

Section I (Basics of Electrical Engineering)

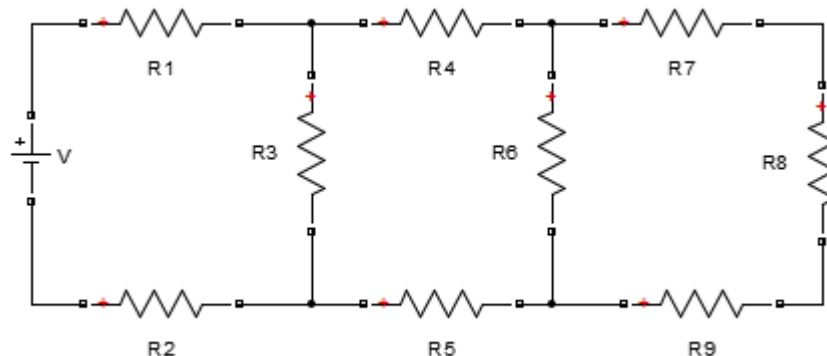
Part A

Answer any 4 questions

1. State and explain Kirchoff's laws .
2. Compare electric and magnetic circuits.
3. Derive the voltage and current relationships in a balanced delta connection.
4. Derive emf equation of a dc generator.
5. Explain the concept of rotating magnetic field. (4 x 5) marks

Part B

6. (a) Calculate
 - (i)The equivalent resistance across the terminals of the supply
 - (ii)The total current and
 - (iii)The power delivered to the $16\ \Omega$ resistor of the circuit shown below $V = 100\text{V}$, $R_1 = 8\ \Omega$, $R_2 = 8\ \Omega$, $R_3 = 24\ \Omega$, $R_4 = 6\ \Omega$, $R_5 = 6\ \Omega$, $R_6 = 24\ \Omega$, $R_7 = 4\ \Omega$, $R_8 = 16\ \Omega$, $R_9 = 4\ \Omega$ (10)



- (b) Derive the expressions for impedance, current and power factor in RLC series circuit. (5)

OR

7. (a) Define the terms
 - (i)time period
 - (ii)rms value
 - (iii)average value
 - (iv)form factor
 - (v)peak factor in an ac circuit(10)
 - (b) Discuss self induced emf , mutual induced emf and coefficient of coupling. (5)
8. (a)What are the different types of dc generators, Explain. (10)

(b) A sinusoidal flux of 0.02 wb (maximum) links with the 55 turns of transformer secondary coil. Calculate the rms value of induced emf in the secondary. Supply frequency is 50 Hz. (5)

OR

9. (a) Explain the construction of a three phase induction motor (10)
(b) Discuss a typical electrical power system (5)