

Max. Time: 90min

Note: Attempt any three questions. All questions carry equal marks.

Q1. Determine the current in each branch using mesh analysis for the circuit shown in Fig-1.

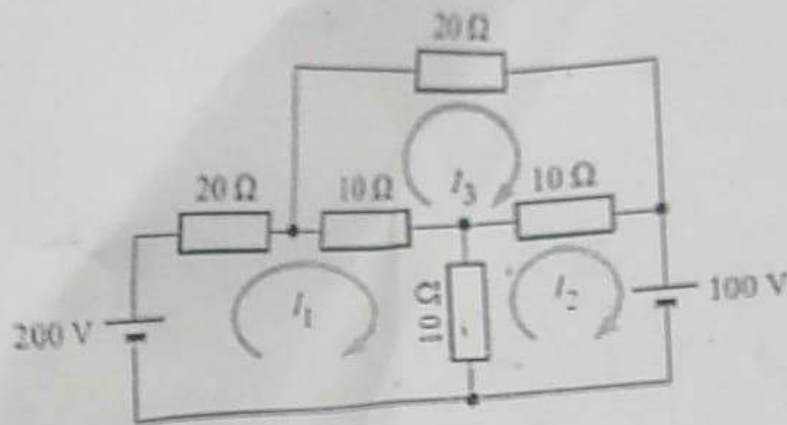


Fig-1

Q2. Find the current in the load resistance 3Ω of the circuit shown in Fig-2 using Thevenin's theorem.

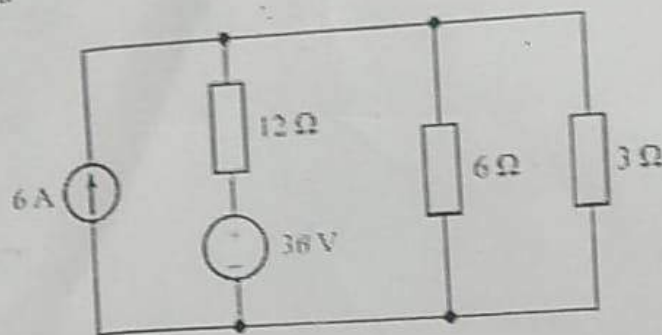


Fig-2

Q3. Determine the average value, rms value, form factor, and peak factor for the half-wave rectified sine wave output voltage.

Q4. The coil, having a resistance of 10Ω and an inductance of 0.2 H , is connected to a 100-V , 50-Hz supply. Calculate (a) the impedance of the coil, (b) the reactance of the coil, (c) the current taken, (d) the phase difference between the current and the applied voltage (e) power factor and (f) power consumed by the circuit.

Q5. State the maximum power transfer theorem. Drive the condition for maximum power transfer through the circuit. What are the applications of this theorem?