1. If the current in a 1µf capacitor is to be 0.1 ma, at what rate in volts per second must the applied voltage change
2. The magnetic flux through a 500-turn winding varied according to Φ = 0.004t webers. Find the induced voltage in the winding (a) when t = 0.01 second and (b) when t = 0.1 second.
3. If the flux through a 150-turn winding varied according to the formula Φ = 0.01t - t 2 + 0.2 webers, what voltage was induced when t = 0.02 second?
4. The magnetic flux Ν in a winding of 600 turns varied as Φ = 0.5t 3/5 webers, where t was in seconds. Find the induced voltage vind when t = 1 second.
5. What formula expresses the voltage vind across a 100 mh inductor if the current i constantly equals 0.2 A? Neglect resistance.
6. How fast does the current in a 12 h winding change to cause an induced voltage of 3.6 v?
7. The mutual inductance between two windings is 0.2 henry. If a current i1 = 11t 3/2 amps flows in one of the windings, how much voltage v2 is induced in the second winding when t = 0.001 second?
8. The mutual inductance between two windings is M = 6 h. How fast must the current in one of the windings vary in amps per second to induce -4.8 volts in the other winding?
9. A winding linked a magnetic field that varied according to φ = 0.002t - 2t 2 webers. When t was 0.0025 second, the voltage induced in the winding measured 8 volts. How many turns did the winding include?
10. If the current in a 30 h inductor changes according to i = 0.02t 5/3 amps, after what interval will the induced voltage measure -96 volts?
11. A voltage v = t3 + 1,000 volts appears across a parallel RC combination, where R = 300 kΩ and C = 20 µf. Find the resulting current ig at any time t.
12. A 50 kΩ bleeder resistor shunts a 4 µf filter capacitor. During a part of the charging process, the voltage across the capacitor varies approximately as vc = 1,000t 2/3 + 100 volts. Find the current ig applied to the combination when t = 0.001 second.
13. A current i = 3t 1/3 + 2 amps flows through a series RL circuit, where R = 100Ω and L = 20 h. Find the voltage vg across this circuit when t = 0.125 second.
14. A relay winding has an inductance of 0.5 h and a resistance of 470Ω. If the winding current i equals t 1/2 + 0.02 amps, find the voltage vg across the winding when t = 0.01 seconds.