

NETWORK THEORY

(Electrical & Electronics Engineering)

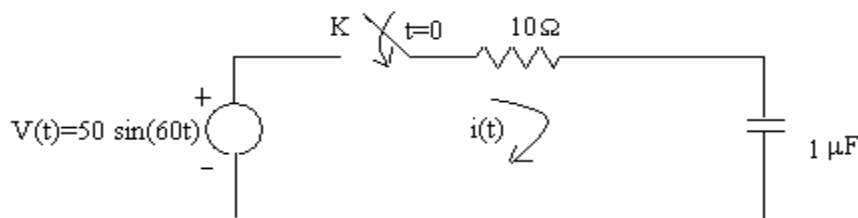
Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

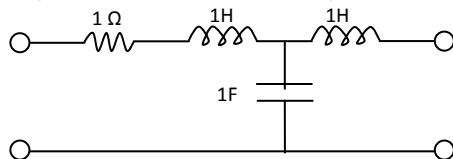
- 1 (a) Explain the measurement of power in a 3-phase system.
(b) Three inductive coils, each with a resistance of 10Ω and an inductance of 0.05 H are connected in delta to three phase 400 V , 50 Hz supply. Calculate:
(i) Phase current and line current.
(ii) Total power absorbed.
- 2 A 3-phase, 3 wire supply of 440 V , RYB system has a star connected load with $Z_R = 5 \angle 30^\circ$, $Z_Y = 10 \angle 45^\circ$ and $Z_B = 10 \angle 60^\circ$ ohms. Calculate line currents and neutral displacement voltage.
- 3 A series R-L circuit has $R = 25 \Omega$ and $L = 5 \text{ H}$. A dc voltage of 100 V is applied at $t = 0$. Find:
(a) The equations for charging current, voltage across R and L.
(b) The current in the circuit 0.5 sec later.
(c) The time at which the drop across R and L are same.

- 4 In the circuit shown below, If the switch 'K' is closed at $t = 0$, Find the expression for the current $i(t)$.



- 5 The Z-parameters of a two-port are $Z_{11} = 10 \Omega$, $Z_{22} = 20 \Omega$, $Z_{12} = Z_{21} = 5 \Omega$
(a) Find the ABCD parameters.
(b) Find the equivalent T-network.

- 6 Find h parameters of the two port network shown below:



- 7 Derive the Fourier series of a triangular wave.
- 8 (a) State Parseval's theorem.
(b) The voltage across a 10Ω resistor is $v(t) = 5e^{-3t} 4(t)$. Find the total energy dissipated in the resistor.
