

Code: 9A02406

B.Tech III Year II Semester (R09) Supplementary Examinations December/January 2015/2016

NETWORK THEORY

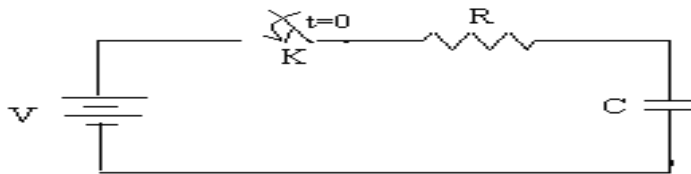
(Electrical and Electronics Engineering)

Time: 3 hours

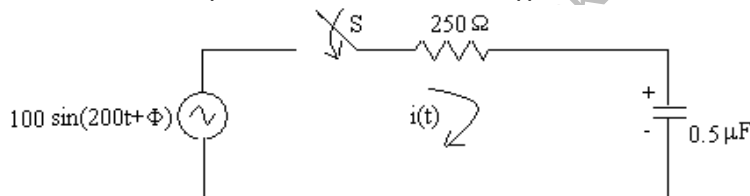
Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

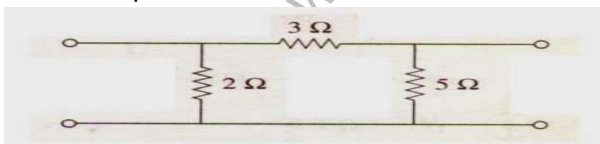
- 1 (a) Derive the relation between phase and line values of a three phase delta connected balanced system.
(b) Three inductive coils, each with a resistance of 15Ω and an inductance of 0.03 H are connected in star to three phase, 400 V , 50 Hz supply. Calculate (i) phase current and line current (ii) 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) Obtain the expression for $i(t)$ in a series R-L circuit is excited with a dc voltage source V , when the switch is closed at time $t = 0$.
(b) In the circuit shown below, switch 'K' is closed at $t = 0$. Find the values of i , di/dt and d^2i/dt^2 at $t = 0^+$. Given that $V = 10 \text{ V}$, $R = 50 \Omega$ and $C = 2 \mu\text{F}$.



- 4 In the RC circuit shown in the fig below, the capacitor has an initial charge $Q_0 = 25 \times 10^{-6} \text{ C}$ with polarity as shown. A sinusoidal voltage $V = 100\sin(200t + \Phi)$ is applied to the circuit at a time corresponding to $\Phi = 30^\circ$. Determine the expression for the current $i(t)$.



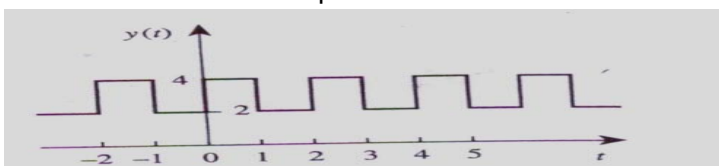
- 5 Find the z-parameters for the circuit shown below:



- 6 Write short notes on:

- (a) Transformed network.
- (b) Cascaded networks.

- 7 Find the Fourier series expansion of the Periodic wave form shown.



- 8 Find the Fourier Transform of the following functions:

- (a) $\delta(t - t_0)$.
- (b) $\cos w_0 t$.