Code: 9A02406 **R09**

B.Tech II Year II Semester (R09) Supplementary Examinations May/June 2016

NETWORK THEORY

(Electrical & Electronics Engineering)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

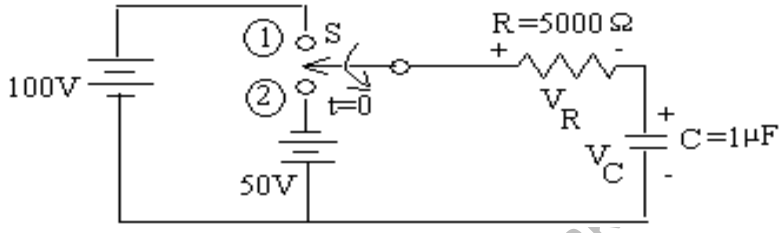
*****

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 15 Ω 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-Φ 400 V load has p.f of 0.6 lagging. The two wattmeters read a total input of 20 kW. Find the readings of each wattmeter. Derive the expression for power factor.

3 The switch in the circuit shown in figure below, is moved from position (1) to (2) at t = 0. Find the expression for V_C and V_R for t > 0.

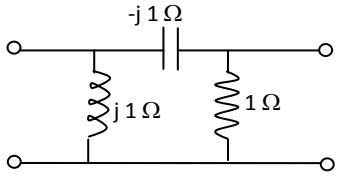


4 Derive the expression for i(t) in a series R-C circuit is exited with a sinusoidal voltage source V = V_m sin(wt+Φ), when the switch is closed at time t = 0.

5 Construct a circuit that realizes the following parameters:

$$[Z]=\begin{bmatrix}10 & 4\\ 4 & 6\end{bmatrix}$$

6 Determine the Z-parameters of the two-ports shown below:



7 Obtain the exponential Fourier series for $f(t) = t,\ -1 < t < 1$ with $f(t + 2n) = f(t)$.

8 Calculate the fraction of the total energy dissipated by a 1Ω resistor in the frequency band $-10 < w < 10$ rad/sec when the voltage across it is $v(t) = e^{-2t}u(t)$.

*****