R09

Code: 9A02406

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

NETWORK THEORY

(Electrical & Electronics Engineering)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

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1 (a) Explain the measurement of power in a balanced 3-phase system using a single watt meter.

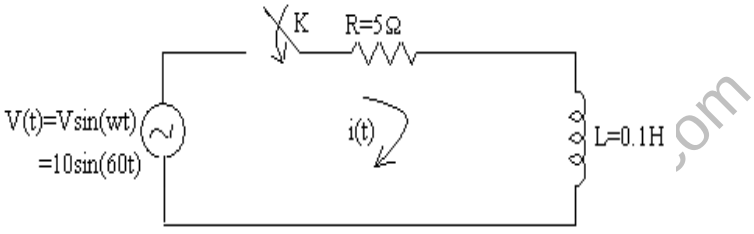
(b) Three inductive coils, each with a resistance of 13 Ω and an inductance of 0.07 H are connected in delta to three phase 440 V, 50 Hz supply. Calculate: (i) Phase current and line current. (ii) Total power absorbed.

2 A 3-Φ 500 V motor load has a power factor of 0.4. Two wattmeters are connected to measure the input. They show the input to be 30 kW. Find the reading of each instrument. Derive the formulae used.

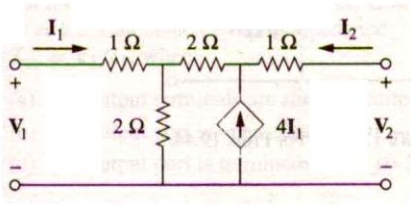
3 (a) Derive the expression for current when a dc voltage V is applied suddenly (i.e. at time = 0) by closing a switch in a series R-L circuit.

(b) A direct voltage of 200 V is suddenly applied to a series L-R circuit having R = 20 Ω and inductance 0.2H. Determine the voltage drop across the inductor at the instant of switching on and at 0.02 sec. later

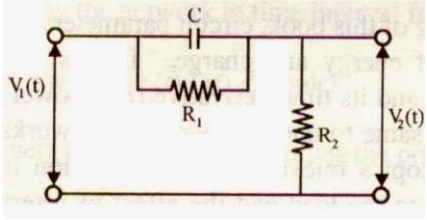
4 In the following circuit shown below, switch 'K' is closed at time t = 0. Obtain expression for the current i(t).



5 Obtain the h-parameters for the two port of figure given below:



6 Find the voltage transfer function of the network shown below:



7 Express the Fourier series $f(t) = 10 + \sum_{n=1}^{\infty} \frac{4}{n^{2+1}} \cos 10nt + \frac{1}{n^3} \sin 10nt$ in a sine and angle form.

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 $v(t) = e^{-2t}u(t)$

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