C-16/C-16S-EE-**302**

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BOARD DIPLOMA SUPPLEMENTARY EXAMINATION, (C-16/C-16S)

JUNE / JULY - 2020

DEEE - III SEMESTER EXAMINATION

ELECTRIC CIRCUITS

Time : 2 Hours]   [Total Marks : 80

PART - A   5×6=30

Instructions :   (1) Answer any **SIX** questions.
                      (2) Each question carries **FIVE** marks.
                      (3) Each answer should not exceed more than **ONE** page.

1   Define active circuit and passive circuit.

2   Define the following terms : (a) Non linear circuits (b) Bilateral circuits (c) Linear circuit.

3   Define (a) Ideal voltage source (b) Ideal current source.

4   An alternating current is represented by $i = 70.7 \sin 520t$ determine (a) Maximum current (b) Frequency (c) Time period.

5   Define the terms : (a) cycle (b) phase (c) frequency.

6   Define the term : (a) Instantaneous value (b) rms value (c) phase and phase difference.

7   Define the terms Resistance, Inductance and Capacitance.

8   Derive resonance frequency in RLC series circuit.

9   Write the methods of solving parallel AC circuits.

10   Define poly phase and draw 3 phase wave forms.

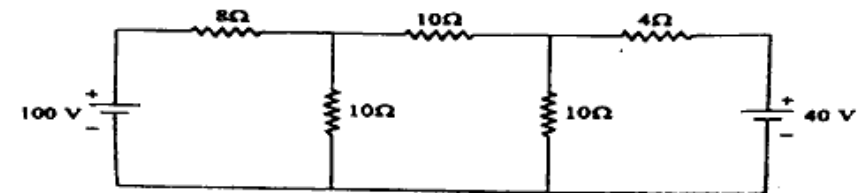5464]   1   [Contd...

PART - B   10×5=50

Instructions :   (1) Answer any **FIVE** questions.
                      (2) Each question carries **TEN** marks.
                      (3) Each answer should not exceed more than **TWO** pages.

11   For the circuit shown in fig. find the loop current by using loop analysis method. http://www.sbtetonline.com

12   Derive the expressions for star to delta and delta to star conversion.

13   (a) State and explain thevenins theorem.   5
     (b) For the network shown determine the value of R for maximum power to R and also calculate the power delivered under these conditions.   5
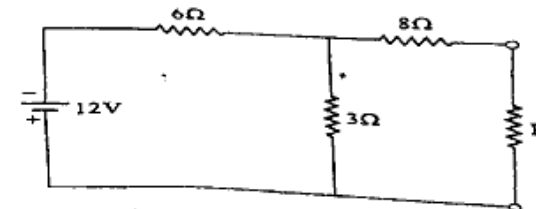

14   Derive average value and RMS value of half wave rectified sine wave.

15   Calculate the impedance, current, phase angle, power and power factor in (a) R–L series cicruit (b) R–C series cicrcuit.

16   A constant voltage at a frequency of 1MHZ is applied to a coil in series with a variable Capacitor when the capacitor is set to 500PF the current has its maximum value while it is reduced to one half when the capacitance is set to 600PF (a) Resistance (b) Inductance (c) Q-factor of the inductor.

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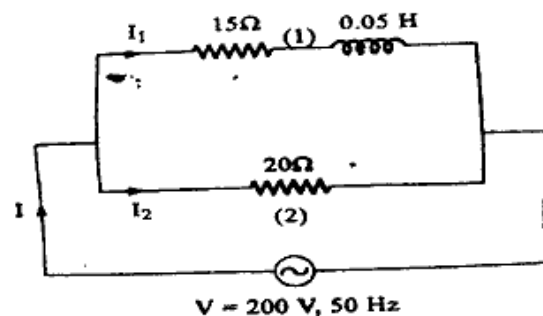
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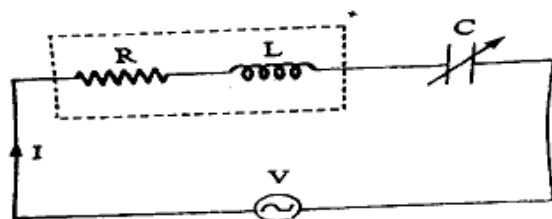
17   A coil resistance 15 ohm and inductance 0.05 H is connected in parallel with a non inductive resistor of 20 ohm. Find (a) the current in each branch of the circuit, (b) the total current supplied, (c) the phase angle of the combination and p.f when a voltage of 200 V at 50 HZ is applied, (d) power consumed in the circuit, (e) total impedance.

V = 200 V, 50 Hz

18   (a)   What are the advantages of poly phase system over single   6
           phase system ?

     (b)   Prove that in star connection line voltage is $\sqrt{3}$ times its   4
           phase voltage.