

Subject Code- BEE- 02

Roll No.

2017031033

B. Tech. -I
ODD SEMESTER
MINOR TEST 2017 - 2018

Subject Name- Electrical Circuit Analysis

Time: 2 Hrs.

Max. Marks: 20

Note: Answer all questions.

Q.1 Attempt any Three parts of the following. Q. 1(a) is compulsory.

(a). Determine all mesh current as shown in figure.1;

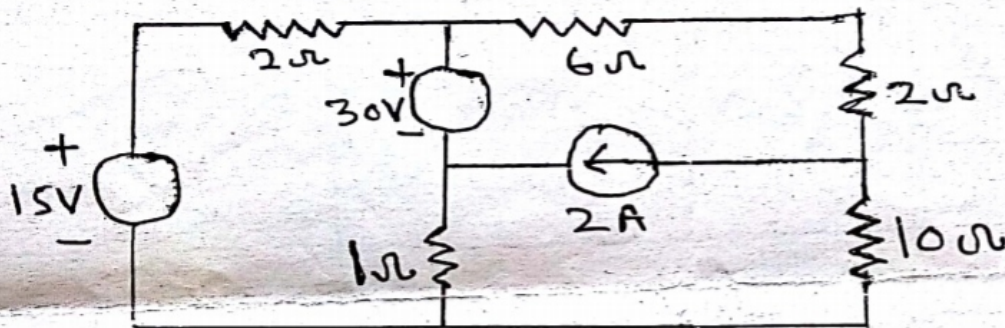


Figure.1

(b). Find the current in 6 ohm resistance using Thevenin's theorem as shown in fig. 2;

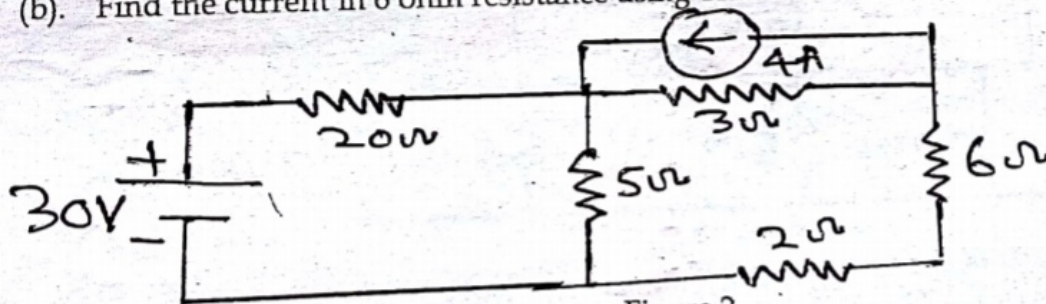


Figure.2

- (c). A sinusoidal alternating has an r.m.s. value of 100 V. Find the instantaneous value 0.0125 second after passing through maximum value.
- (d). Define the average value of a sinusoidal current. Derive an expression for the average output value for a half wave rectified sinusoidal current waveform.

Q.2 Attempt any Two parts of the following. Q. 2(a) is compulsory.

(a). Define Superposition theorem and calculate current in 1 ohm resistance of figure.3 using Superposition theorem;

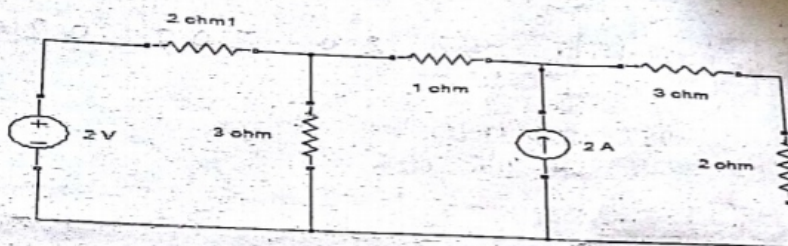


Figure.3

- (b). Find circuit shown in figure.4, what will be the value of R_L to get maximum power. What maximum power delivered to the load. 2

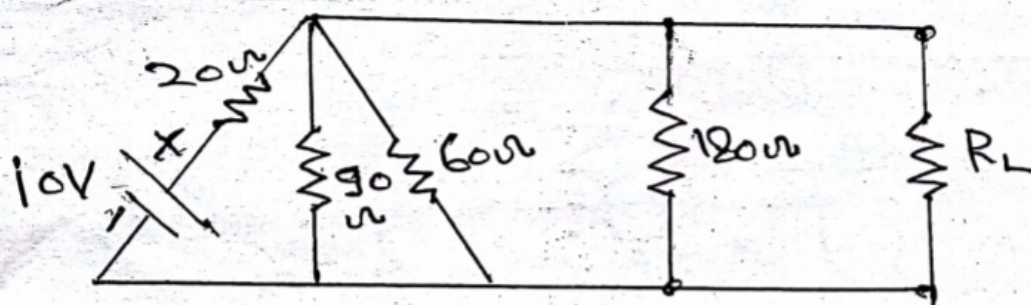


Figure.4

- (c). Find the current in each branch of the circuit of fig. 5 using Nodal analysis.

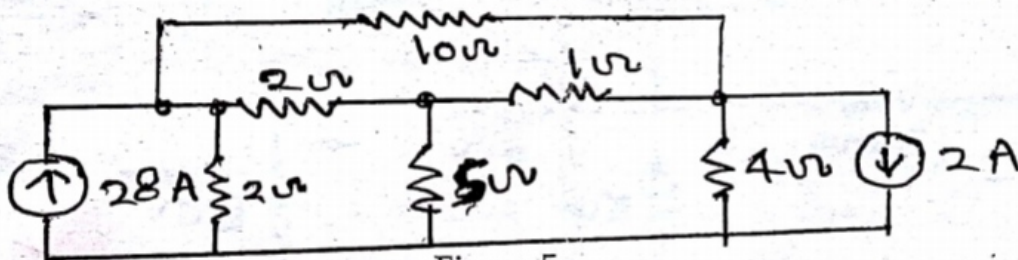


Figure.5

Q.3 Attempt any Two parts of the following. Q. 3(a) is compulsory.

- Three impedances Z_1 , Z_2 and Z_3 are connected in series across 200 V, 50 Hz supply. If the $Z_1 = 20 \Omega$, $Z_2 = (8 + j10) \Omega$, $Z_3 = (15 - j15) \Omega$, determine (i) the current through the circuit, (ii) the power factor of the circuit, and (iii) the voltage across each impedance.
- Circuits consist of 100 Ω resistors in parallel with 60 μF capacitor, and is connected to 200 V, 50 Hz supply. Calculate (i) the branch currents and the supply current, (ii) circuit phase angle, and (iii) circuit impedance
- Derive the expression for the resonant frequency of a parallel circuit, one branch consist of a coil inductance L and resistance R , whereas another branch of capacitor C