

23/4/19



B.E. DEGREE EXAMINATION, APR / MAY 2019
II SEMESTER
ELECTRICAL AND ELECTRONICS ENGINEERING
EE7201 ELECTRIC CIRCUIT ANALYSIS

Time: 3 Hours

Max. Marks: 100

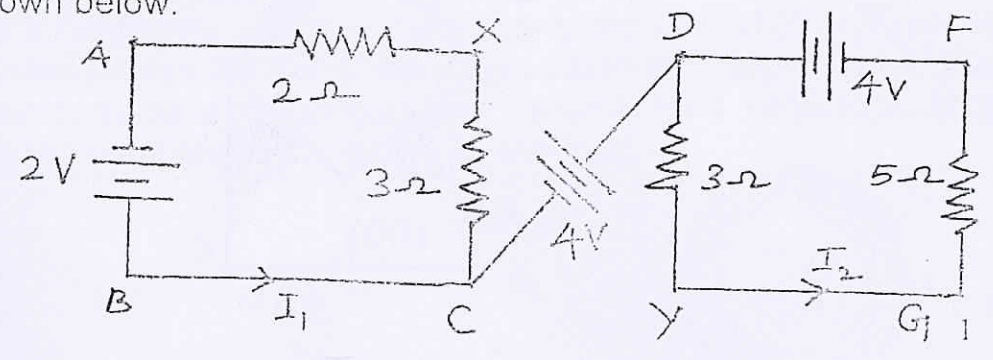
Answer all questions

PART- A (10 X 2 = 20)

1. What is an anti-resonance circuit?
2. Obtain the mutual inductance between two coils of inductance 16 H and 4-H by assuming the coefficient of coupling $K=1$.
3. Which type of connection of three phase system is preferred at the point of utilization? State the reason for it.
4. An alternating voltage is given by $e=311\sin 314t$. Calculate frequency, maximum value, average value, rms value and time period.
5. Write the general form of Nodal analysis and Mesh analysis.
6. State all the ways of representing vectors.
7. What is the importance of power factor in an ac circuit?
8. All the resistors in delta are equal and the same is converted into star network. Which net work has the larger resistance? What is the value of resistance in star?
9. Maximum power transfer theorem is more applicable to communication circuits than the power circuits. What is the reason for this limitation?
10. Draw a power triangle and explain about it.

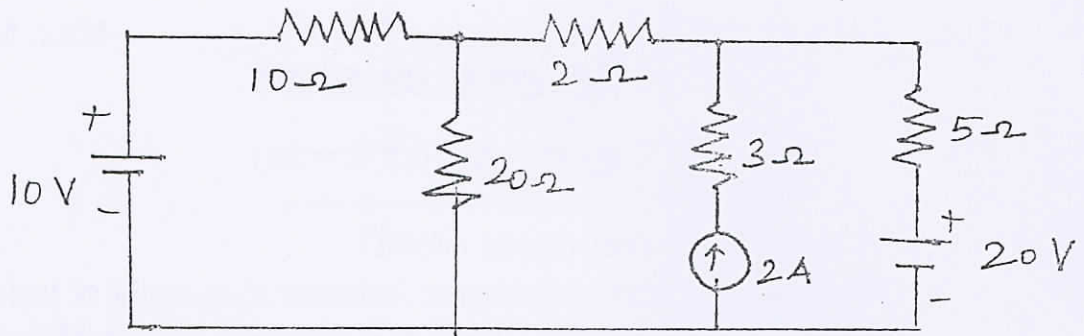
PART- B (5 X 13= 65)

11. (a) What is the potential difference between points X and Y in the circuit shown below.

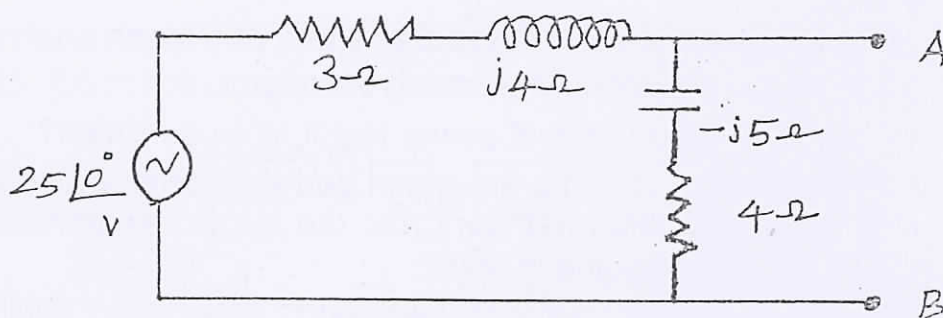


(OR)

11. (b) Find the voltage across the 2 ohm resistor in the circuit below using Superposition theorem.

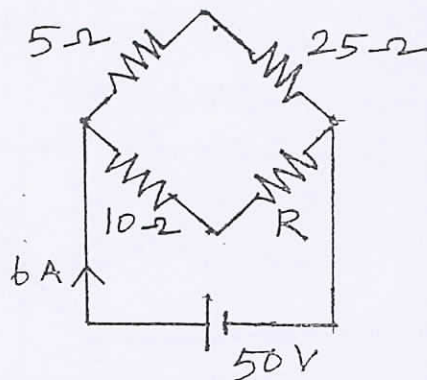


12. (a) Determine the Norton's equivalent circuit between the output terminals AB for the circuit given below.

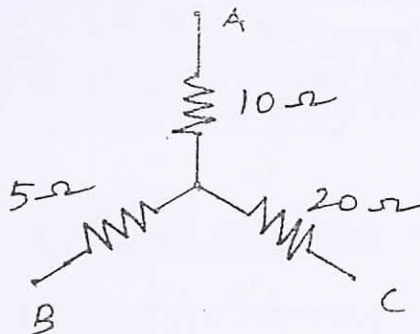


(OR)

12. (b) (i) Determine the value of resistance R and current in each branch when the total current taken by the circuit is 6A.



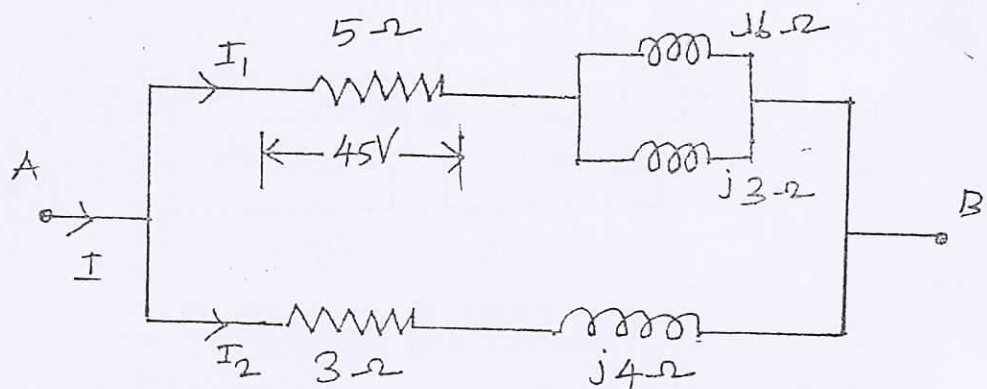
(ii) Obtain the delta equivalent of the following star.



13.(a) A coil of resistance 5 ohms and inductance of 100 mH is connected in series with a 200 microfarad capacitor across a 200 V, 50 Hz supply. Calculate (i) the inductive reactance (ii) the capacitive reactance (iii) impedance of the whole circuit in complex form (iv) the current (v) the power factor (vi) total power (vii) the voltage across the coil and capacitor. Draw the illustrative phasor diagram depicting the voltage and current.

(OR)

13. (b) A voltmeter connected across 5 ohm resistor shown in figure reads 45 V. Find the current I in the circuit given below.

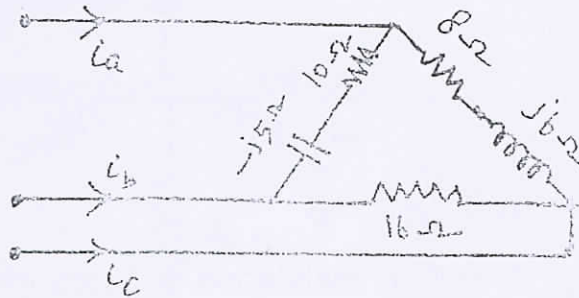


14. (a) A three phase balanced delta connected load of $(4.3+j7)$ ohms is connected across a 400V, three phase balanced supply. Determine the phase currents and line currents. Assume RYB sequence. Also calculate the complex power drawn by the load.

(OR)



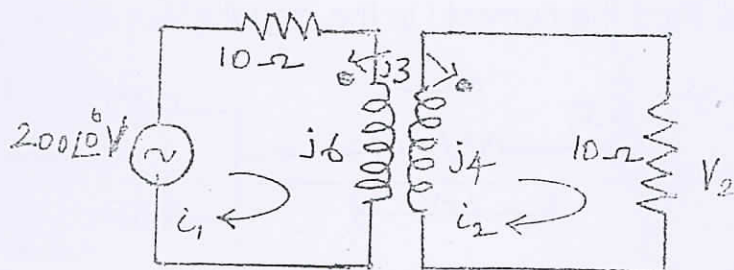
14. (b) The Unbalance delta connected load of the following figure is applied by a balanced voltage of 200 V in the positive sequence. Find the line currents by taking voltage as reference.



15.(a) A resistor of 10 ohms, inductor of 0.1 mH and a capacitor of 50 microfarad are connected in series across a supply of 100 V variable frequency supply. Determine the frequency at which the circuit resonates? Also find the voltage across the inductor at resonance and the Q-factor of the circuit.

(OR)

15. (b) In the circuit, find the phasor voltage V_2 by Mesh analysis.



PART - C (1 X 15= 15)

16. Calculate the voltage across the 15 ohms resistor in the network shown in figure using nodal analysis.

