Code No. 2960/AICTE/M

FACULTY OF ENGINEERING

B. E. II – Semester (CE/EE/Inst./ECE/CSE/CME) (AICTE) (Main & Backlog) Examination, December 2020

Subject: Basic Electrical Engineering

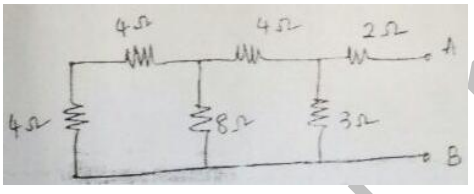
Time: 2 hours **Max. Marks: 70**

Note: (Missing data if, any can be assumed suitable)

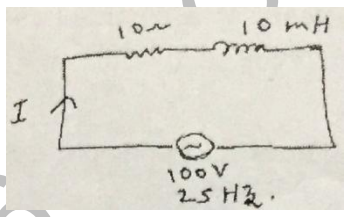
PART – A

Answer any five questions. **(5 x 2 = 10 Marks)**

1. State and explain Kirchhoff's current law.
2. Calculate the equivalent resistance between terminals A and B in the circuit.



3. Define RMS value and peak value of alternating quantity.
4. For the circuit shown calculate current I.



5. Draw no load phasor diagram of single phase transformer.
6. What is statically induced EMF.
7. Classify dc generators based on excitation.
8. List out the essential parts of DC machine.
9. What is Miniature Circuit Breaker (MBC)?
10. What is the importance of power factor?

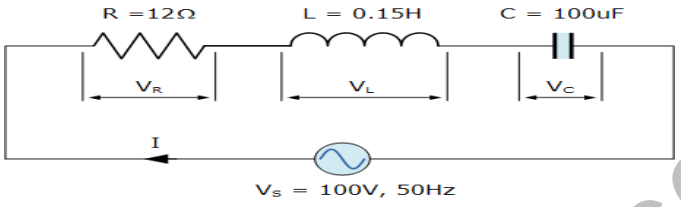
PART – B

Answer any four questions. **(4 x 15 = 60 Marks)**

11. State and explain Thevenins's theorem and Norton's theorem with help of neat circuit diagrams and their related expressions.
12. (a) A resistance of 10Ω is connected in series with an inductance of 0.05H and a capacitance of 300μF to a 100V, 1-ϕ ac supply. Calculate the magnitude and phase angle of the current when the frequency of the supply is (a) 25Hz (b) 50Hz.

…..2

(b) A series RLC circuit containing a resistance of 12Ω, an inductance of 0.15H and a capacitor of 100uF are connected in series across a 100V, 50Hz supply. Calculate the total circuit impedance, the circuits current, power factor and draw the voltage phasor diagram.



13. (a) Derive the emf equation of 1-ϕ transformer.

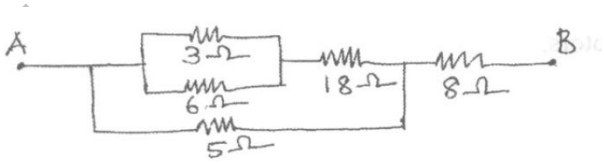
(b) In a 25 kVA, 2000/200V transformer, the iron and copper losses are 350W and 400W respectively. Calculate the efficiency on unity power factor at (a) full load (b) half full load.

14. Explain in detail constructional details and principle of operation D.C Generator.

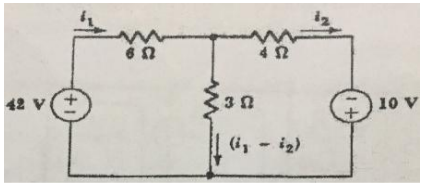
15. (a) Describe different types of cables used for domestic wiring.

(b) What do you understand by power factor? Explain the necessity of improving power factor?

16. (a) Calculate the effective resistance of the following combination of resistances and the voltage drop across each resistance when a potential difference of 60 volts is applied between points A and B.



(b) Solve for current in 3 ohm resistance in the circuit shown below using Thevenins theorem.



17. (a) The current in a series circuit of R=15Ω and L=30mH and C=20μF. Determine the source frequency and impedance Z.

(b) What do you mean by 3-∅ balanced load?

******