

B.Tech II Year I Semester Examinations, May-June, 2012
ELECTRICAL ENGINEERING
 (COMMON TO ME, CHEM)

Time: 3 hours

Max. Marks: 80

Answer any five questions
 All questions carry equal marks

- - -

- 1.a) Find the equivalent resistance between a and b of the circuit in Figure.1.

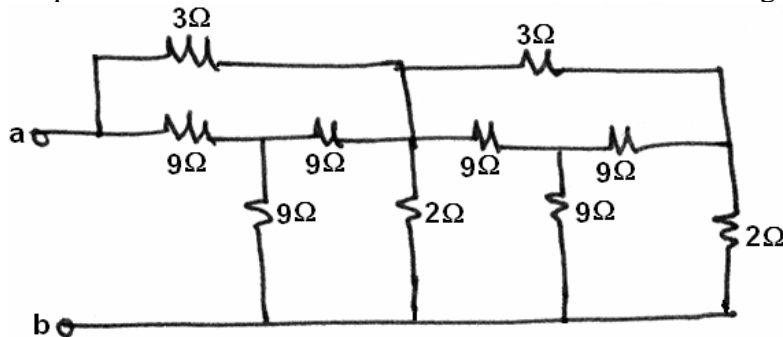


Figure.1

- b) Calculate the effective inductance of the circuit shown below in Figure.2. [8+8]

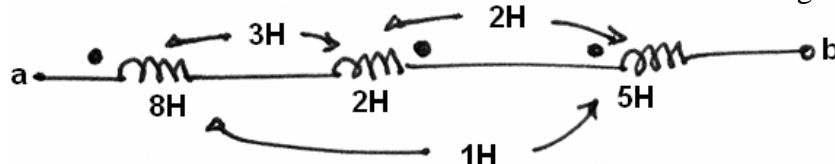


Figure.2

- 2.a) Explain in detail, how an alternating emf can be generated.
- b) Three impedances of $(5+j15)\Omega$ connected in delta are connected to a 220V, 3- ϕ , 50Hz supply. Calculate currents, real power, reactive power and apparent power delivered to load. [4+12]
- 3.a) Explain the constructional details of DC machine with neat sketches.
- b) A 75 kW, 230 V compound generator has the following data:
 $R_a = 0.02\Omega$, $R_{sc} = 0.04\Omega$; $R_f = 1\Omega$, Brush drop = 2V. Compare the generator induced emf when fully loaded in
- Long shunt compound
 - Short shunt compound. [8+8]
- 4.a) Explain how to determine efficiency, regulation and equivalent circuit parameters of 1- ϕ transformer by conducting O.C. and S.C. tests.
- b) Derive the emf equation of an alternator. [10+6]
- 5.a) Explain in detail, the operation of repulsion type moving iron instruments.
- b) What are the merits and demerits of moving coil instruments? [10+6]

- 6.a) Calculate average, RMS values and form factor of the periodic wave form shown in Figure.3.

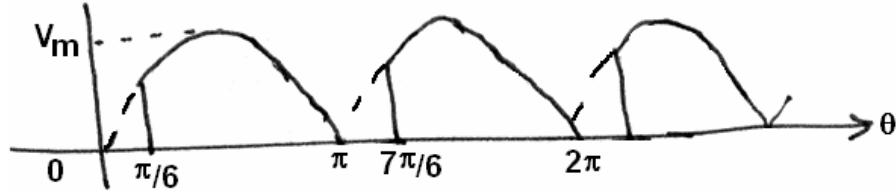


Figure.3

- b) Draw the phasor diagram of 1- ϕ transformer under leading and lagging p.f. load conditions. [8+8]
- 7.a) Find the total impedance, phase angle and total current of the circuit shown in Figure.4.

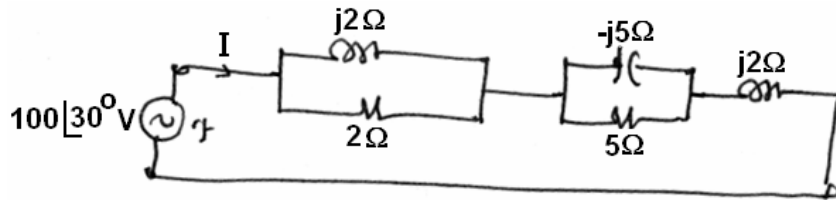


Figure.4

- b) With a neat diagram, explain the construction and operation of three point starter. [8+8]
8. Write short notes on the following:
- Principle of operation of 3- ϕ induction motor
 - Induction type energy meter. [16]

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 i) Long shunt compound
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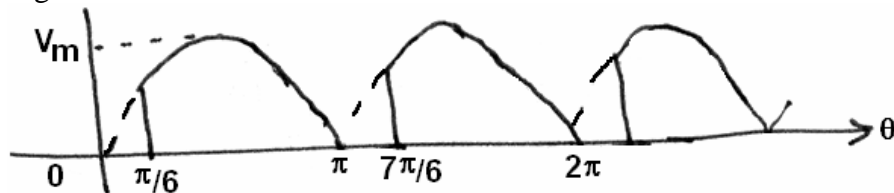


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- b) Draw the phasor diagram of 1- ϕ transformer under leading and lagging p.f. load conditions. [8+8]

- 5.a) Find the total impedance, phase angle and total current of the circuit shown in Figure.4.

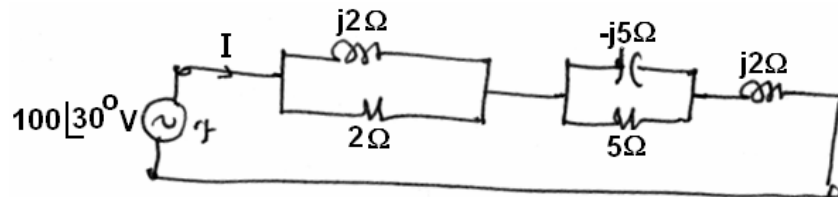


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- b) With a neat diagram, explain the construction and operation of three point starter. [8+8]

6. Write short notes on the following:
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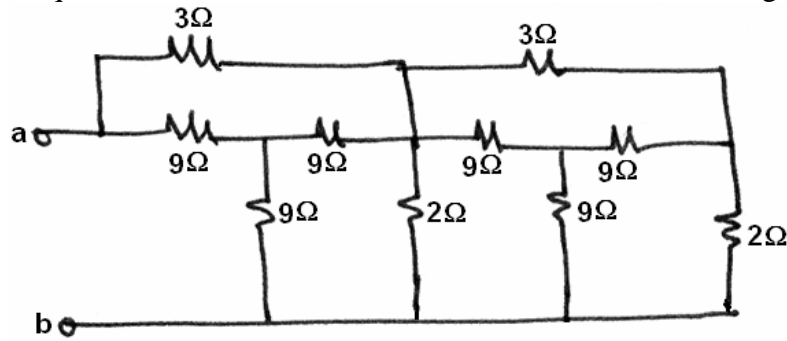


Figure.1

- b) Calculate the effective inductance of the circuit shown below in Figure.2. [8+8]

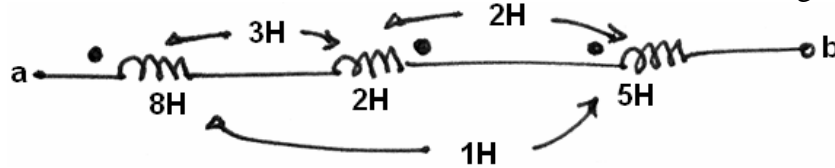


Figure.2

- 8.a) Explain in detail, how an alternating emf can be generated.
 b) Three impedances of $(5+j15)\Omega$ connected in delta are connected to a 220V, 3- ϕ , 50Hz supply. Calculate currents, real power, reactive power and apparent power delivered to load. [4+12]

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- 1.a) Explain in detail, the operation of repulsion type moving iron instruments.
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- 2.a) Calculate average, RMS values and form factor of the periodic wave form shown in Figure.3.

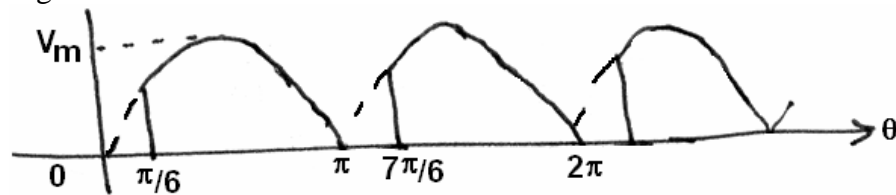


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- b) Draw the phasor diagram of 1- ϕ transformer under leading and lagging p.f. load conditions. [8+8]
- 3.a) Find the total impedance, phase angle and total current of the circuit shown in Figure.4.

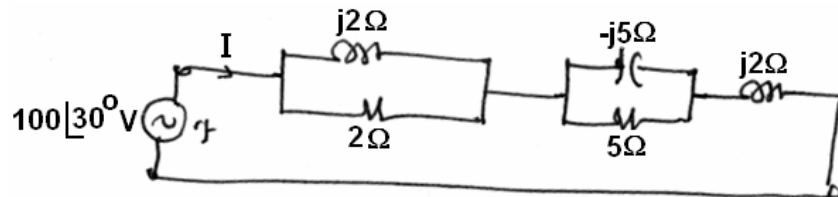


Figure.4

- b) With a neat diagram, explain the construction and operation of three point starter. [8+8]
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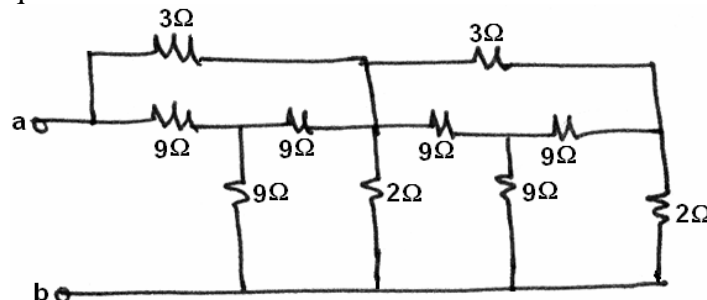


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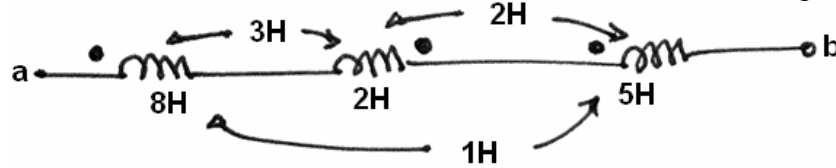


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- 6.a) Explain in detail, how an alternating emf can be generated.
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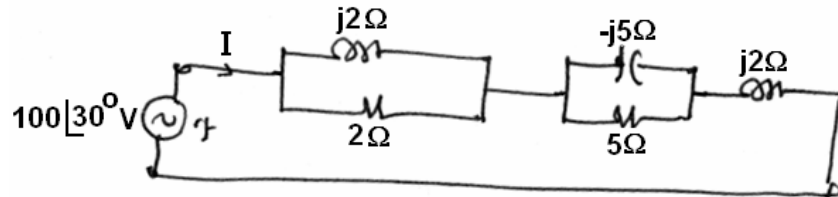


Figure.4

- b) With a neat diagram, explain the construction and operation of three point starter. [8+8]
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- 3.a) Find the equivalent resistance between a and b of the circuit in Figure.1.

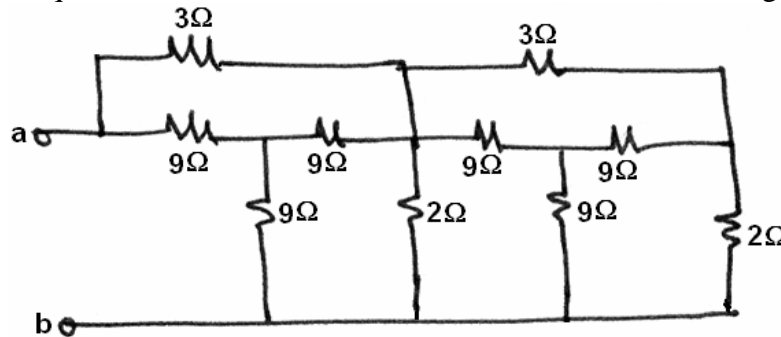


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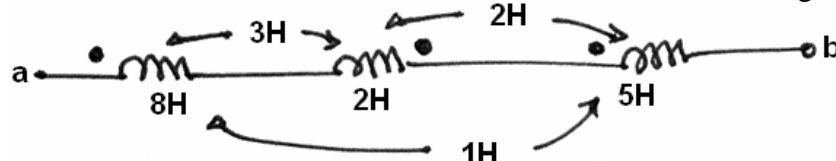


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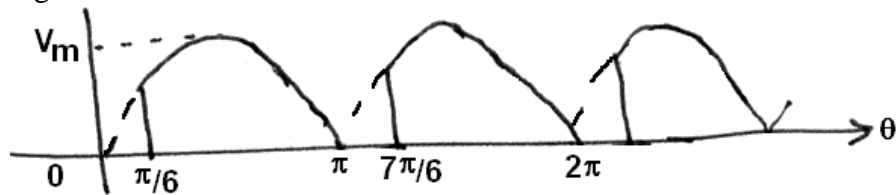


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