

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech I Year II Semester (R16) Regular Examinations May/June 2017

ELECTRICAL CIRCUITS

(ELECTRICAL & ELECTRONICS ENGINEERING)

(For Students admitted in 2016 only)

Time: **3 hours**

Max. Marks: **60**

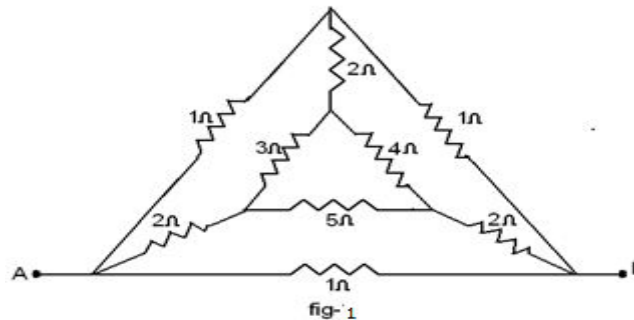
(Answer all Five Units **5 X 12 = 60** Marks)

UNIT-I

- 1 a (i) Define resistance and conductance 2M
- (ii) State ohm's law ? also write it's limitations 2M
- (iii) Define Power and energy 2M
- b (i) Define inductance and capacitance 2M
- (ii) State Kirchoff's Voltage law 2M
- (iii) State Kirchoff's Current law 2M

OR

- 2 a Explain super node analysis and super mesh analysis 4M
- b Find the equivalent resistance across the terminals A and B of the network shown in fig (1) using Star-delta transformation. 8M



UNIT-II

- 3 a Determine the average value, RMS value, Form factor and peak factor of a pure sinusoidal wave forms 6M
- b An AC Circuit consists of a pure resistance of 20Ω and it is connected across an AC supply of 230V, 50HZ. Find (a) Current (b) Power Consumed (c) Sinusoidal equations for Voltage and Current. 6M

OR

- 4. A 50Ω resistor is connected in series with a $25\mu\text{F}$ Capacitor across a 230V, 50HZ AC Supply. Find (a) Capacitive reactance (b) Impedance (c) Current (d) Phase angle (e) Voltage drop across resistance (f) Voltage drop across Capacitance (g) Power Factor 12M

UNIT-III

- 5 a In a parallel resonance circuit (Tank circuit) $R=2\Omega$, $L=1\text{mH}$ and $C=10\mu\text{F}$, Find the Resonant frequency, Dynamic impedance and Bandwidth. 6M
- b Obtain the expression for resonant frequency for parallel RL-RC circuit 6M

OR

- 6 a Derive the expression for centre and radius of series RL circuit. 6M
- b Draw the Locus diagram of a Series RL Circuit? 6M

UNIT-IV

- 7 a Explain Dot convention 4M
 b Two coupled coils with $L_1=0.02H$, $L_2=0.01H$ and $K=0.5$ are connected in four different ways Series aiding, series opposing, parallel aiding and parallel opposing. Determine the equivalent Inductance in all four cases 8M
- OR**
- 8 a Explain in detail about Statically Induced emf and Dynamically Induced emf? 6M
 b Explain Self Inductance, Mutual Inductance and Co-efficient of coupling in detail? Give the relation between L_1 , L_2 , K & M ? 6M

UNIT-V

- 9 a State and explain tellegan's theorem? 6M
 b Determine the voltage across $(2+j5) \Omega$ impedance as shown in figure. (2) by using Super position Theorem? 6M

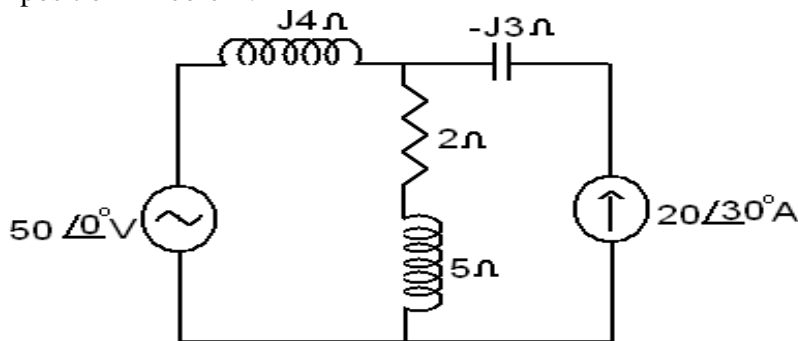


fig- 2

OR

- 10 a State and Explain Noton,s theorem 6M
 b Determine the Thevenin's equivalent circuit for the circuit shown in figure. (3). 6M

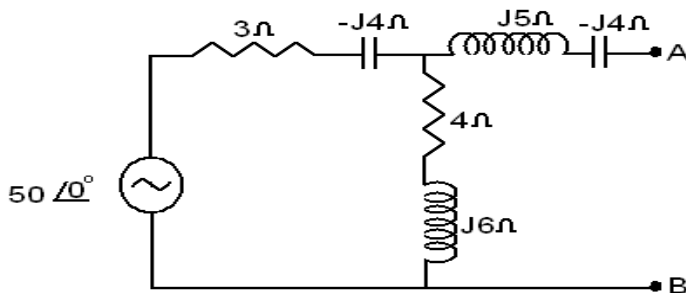


fig- 3

***** END *****