SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.TECH I Year II Semester (R16) Supplementary Examinations Dec 2017
ELECTRICAL CIRCUITS
(ELECTRICAL & ELECTRONICS ENGINEERING)

Time: **3 hours**   Max. Marks:**60**

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

UNIT-I

1 a Explain circuit (or) Network elements   6M

   b Find the current in the 5Ω resistor in the network shown in figure (1)

fig-1
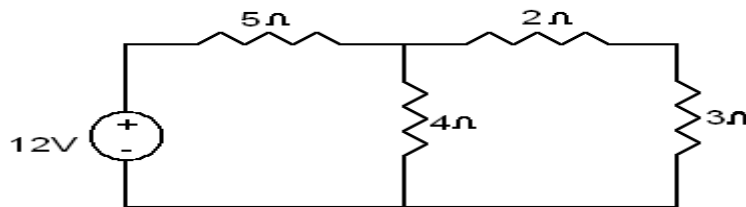   6M

OR

2 a Derive the expression for Delta connected resistances in terms of Star connected   6M

   b Determine the current in the 5Ω resistor in the network given in figure (2)
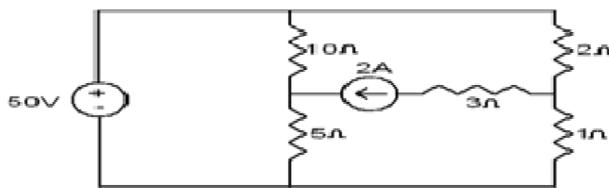

fig- 2
                                                                                 6M

UNIT-II

3 a Find the form factor of the half wave rectified sine wave shown in fig(3)

fig- 3
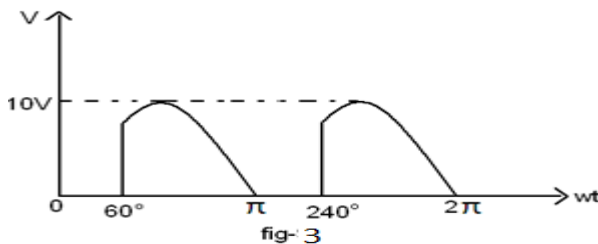   6M

   b A Capacitor of 1µF is connected across an AC Voltage of V=170 sin (400t).
      Determine (i) Capacitive Reactance
      (ii)Sinusoidal expression for current (iii) Maximum current.   6M

OR

4 a 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

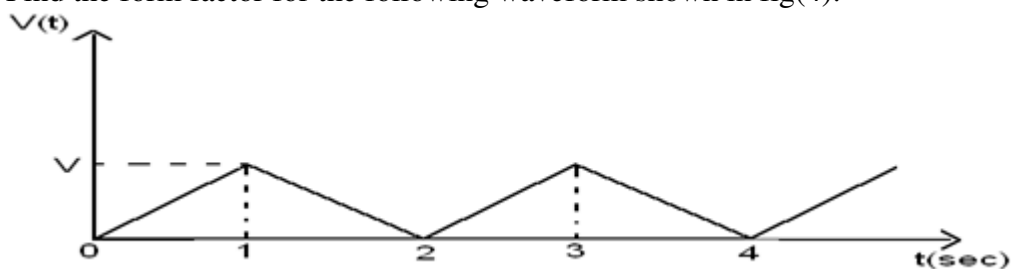   b Find the form factor for the following waveform shown in fig(4):

fig- 4
                                                                                 6M

UNIT-III

5   a   Derive the expression for the centre and radios of series RC circuit using Locus diag   6M
    b   Draw the Locus diagram of a Series RC Circuit?   6M

OR

6   a   Obtain the expression for resonant frequency and Q-factor for Series R-L-C circuit   6M
    b   In a parallel resonant circuit shown in figure (5) find the resonance frequency and quality factor
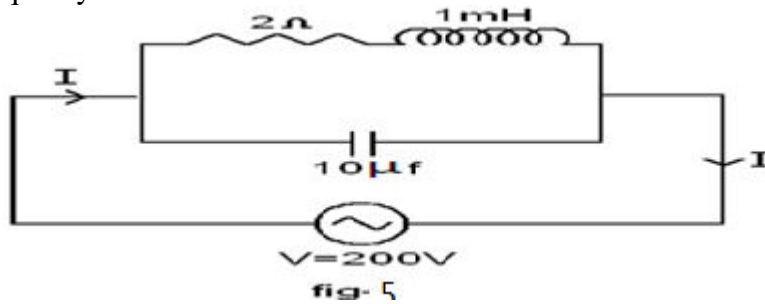

fig- 5   6M

UNIT-IV

7   a   State and explain Faraday's Laws of Electro Magnetic Induction?   6M
    b   Explain Self Inductance, Mutual Inductance and Co-efficient of coupling in detail? Give the relation between L1, L2, K & M?   6M

OR

8   a   Derive the expression for equivalent inductance when the coupled inductors are connected in Parallel aiding and parallel opposition?   6M
    b   explain the difference between Electrical circuits and magnetic   6M
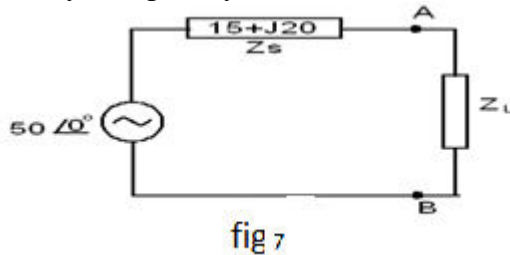
UNIT-V

9   a   State and explain tellegance,s theorem   6M
    b   Determine the Norton's equivalent circuit for the circuit shown in figure(6)
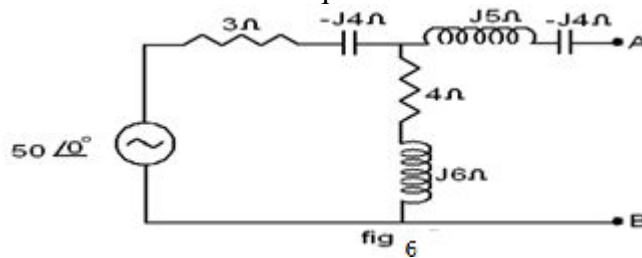
fig 6   6M

OR

10 a   State and explain super position theorem   6M
    b   Verify Reciprocity Theorem for the network shown in figure (7)

fig 7   6M

*** END ***