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ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Regular Examinations, December,2016
ENGINEERING DRAWING
(Common to CE, ME)

Time: 3 Hours   **Max Marks: 70M**

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered at one place

UNIT-I

1. The foci of an ellipse are 90 mm apart and the minor axis is 65 mm long. Determine the length of the major axis and draw half of the ellipse by concentric circle method and other half by oblong method.

(OR)

2. Construct a parabola when the distance between focus and the directrix is 40mm. Draw tangent and normal at any point P on the curve.

UNIT-II

3. a) A point A is 20 mm above H.P. and in the first quadrant. Its shortest distance from the reference line XY is 40 mm. Draw the projections of the point and determine its distance from V.P

   b) A point at 25 mm above the reference line xy is the front view of two points A and B. The top view of A is 40 mm behind V.P. and the top view of B is 50 mm in front of V.P. Draw the projections of the points and state their positions relative to the planes of projection and the quadrants in which they lie.

(OR)

4. a) Draw the projections of the following points on the same ground line, keeping the Projectors 25 mm apart.
   i.) A, in the H.P. and 20 mm behind the V.P
   ii.) B, 40 mm above the H.P. and 25 mm in front of the V.P.

   b) State the quadrants with the help of drawing, in which the following points are situated.
   i) A point P; its top view is 40 mm above xy; the front view 20 mm below the top view.
   ii) A point Q; its projections coincide with each other 40 mm below xy.

UNIT-III

5. a) A square plane ABCD of 30 mm, is parallel to H.P. and 20 mm away from it. Draw the projections of the plane, when two of its sides are
   i.) Parallel to V.P   ii.) Inclined at 30^0 to V.P

   b) A rectangular plane of size 60×30 mm, has its shorter side on H.P. and inclined at 30^0 to V.P. Draw the projections of the plane, if its surface is inclined at 45^0 to H.P

(OR)

6. Draw the projections of a regular hexagon of 25 mm side, having one of its sides in the H.P. and inclined at 60^0 to the V.P, and its surface making an angle of 45^0 with the H.P

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UNIT-IV

7.   A square pyramid, base 40mm side and axis 90mm long, has a triangular face on the ground and the vertical plane containing the axis makes an angle of 45^0 with the V.P. Draw its projections

(OR)

8.   Draw the projections of a cone, base 45mm diameter and axis 50mm long, when it is resting on the ground on a point on its base circle with the axis making an angle of 30^0 with the H.P. and parallel to the V.P.;

UNIT-V

9.   Draw the front view, top view and left hand side views of V- block as shown in **figure.1**   All dimensions are in mm

(OR)

10.   Convert the isometric view of the picture shown in the figure 2 below in to orthogonal projections. All dimensions are in mm

Figure. 1

Figure. 2
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I B.Tech I Semester Regular Examinations, December, 2016

BASIC ELECTRIC CIRCUIT ANALYSIS
(Electrical and Electronics Engineering)

Time: 3 Hours   **Max Marks: 70M**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered at one place

UNIT-I

1. a) Explain the star to delta and delta to star transformation with an example. **6M**

   b) The current in 6 Ω resistor of the network is 2A as shown in Fig.1. Determine the currents in all resistors and voltage across the network. **8M**
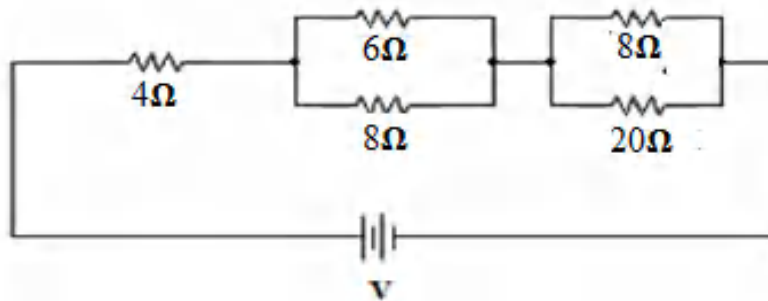
Fig1

(OR)

2. a) State and explain Kichoffs law **6M**

   b) Find the equivalent resistance between AB in the circuit shown in fig. All the resistances are equal to R **8M**
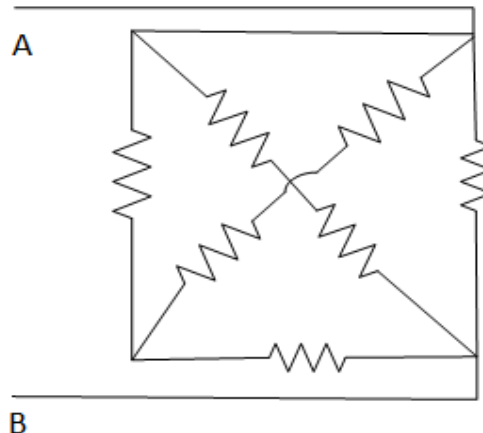
3 a) Obtain the expression for coefficient of coupling ·   **6M**

    b) Use nodal analysis, determine the voltage V_1 and V_2 in the circuit shown in fig.3   **8M**
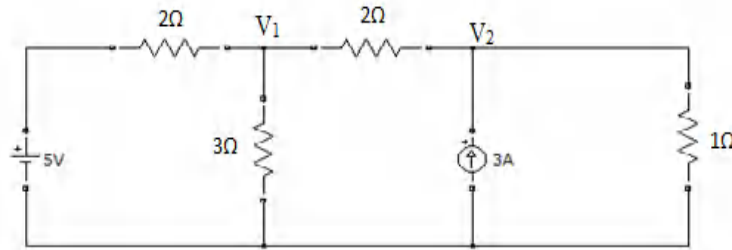
Fig.3

(OR)

4 a) Explain the voltage - current relationship in capacitor and inductor ·   **6M**

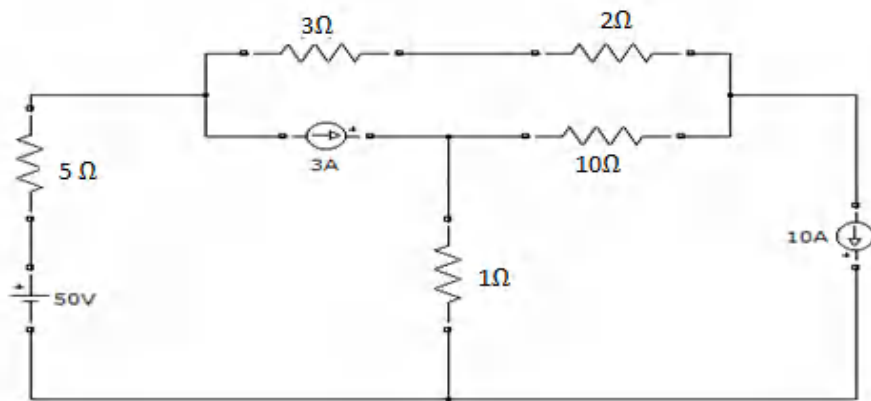   b) Determine the branch current in the circuit shown in fig.4 using mesh analysis   **8M**

Fig.4

UNIT-III

5. a) When a sinusoidal voltage of 120 V(rms) is applied to a series RL circuit, it is found that there occurs a power dissipation of 1200W and a current flow given by i(t) = 28.3 sin(314t-300). Find the circuit resistance and inductance?   **6M**

b) Find then RMS and average value of the wave form shown in fig.5   **8M**
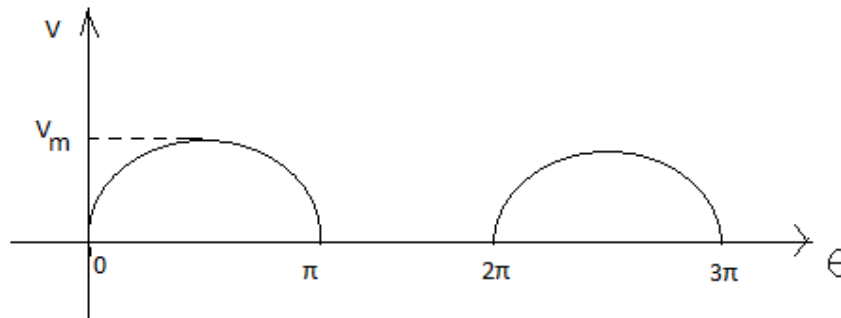
Fig.5

(OR)

6. a) Define (i) RMS value (ii) Average value (iii) Form Factor (iv) Peak Factor   **8M**

 b) A pure inductive coil allows a current of 10 A to flow from a 230 V, 50 Hz supply. Find the inductive reactance, inductance of the coil and power absorbed   **6M**

UNIT-IV

7. a) Show that the locus of the current in an R-L circuit with R variable is a semicircle. Find the radius and the centre of the circle   **6M**

 b) A Parallel circuit has a fixed capacitor and variable inductor having constant quality factor of 4. Find the value of inductance and capacitance for circuit impedance of 1000 Ω at resonating frequency 2.4 Mhz. what is bandwidth of circuit?   **8M**

(OR)

8. a) Derive the expression for Q factor and band width of series RLC circuit   **6M**

b) Find the value of L at which the circuit resonates at a frequency of 1000 rad/sec in the circuit shown in Fig.6   **8M**
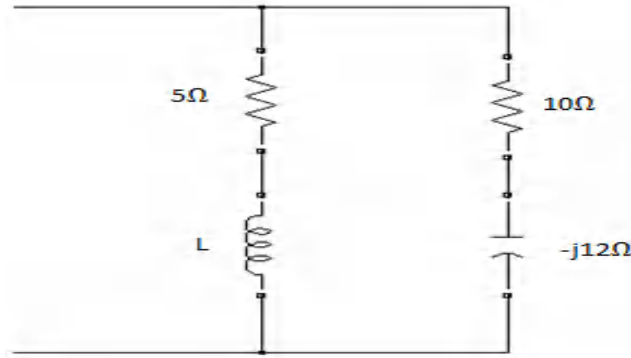
Fig.6

9. a) A balanced Δ connected load having an impedance 20 – j15Ω is connected to a Δ connected, ABC sequence generator having line voltage of 330V. Calculate the phase currents of the load and the line currents.   **7M**

b) Find the line currents in the unbalanced three phase circuit of figure and the real power absorbed by the load.   **7M**
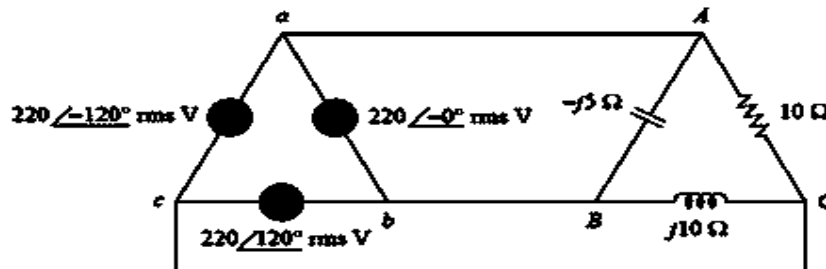
(OR)

10. a) A three phase 440 V star connected balanced supply is connected to star connected three phase load of $50\angle 0^0\ \Omega$, $15\angle -25^0\ \Omega$, and $25\angle 20^0\Omega$, Find line current, power and current in neutral of the four wire system.   **7M**

b) A 3-phase star connected system with 230V between each phase and the neutral has resistances of 4Ω, 5 Ω and 6 Ω respectively in their phases. Estimate the current flowing in each phase and the neutral wire current. Find the total power absorbed

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I B.Tech I Semester Regular Examinations, December, 2016
NETWORK ANALYSIS
(Electronics & Communication Engineering)

Time: 3 Hours   Max Marks: 70M

Answer ONE Question from each Unit
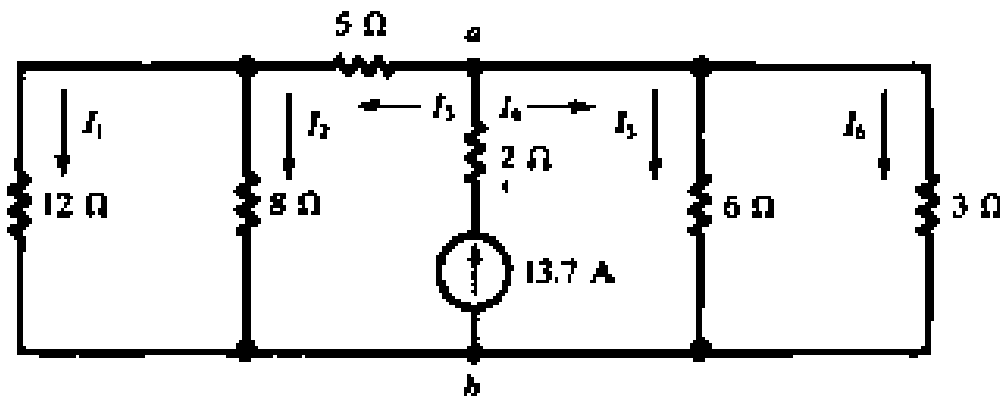All Questions Carry Equal Marks
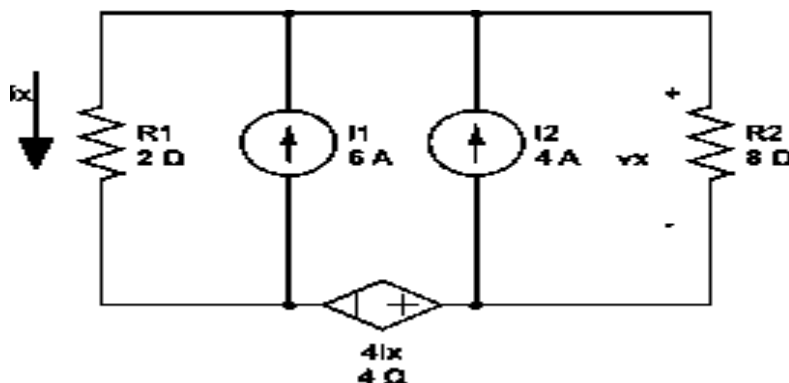All parts of the question must be answered at one place

UNIT-I

1 a) Find the inductance of a coil through which a current of 0.2A with an energy of 0.1j?

  b) Derive the voltage –current relation and energy stored in a capacitor?

(OR)

2 a) Find the current in the 12 ohm resistor using current division technique?

  b) obtain the voltage V_x in 8 ohm resistor

UNIT-II

3 a) Find the Mesh currents for the given network
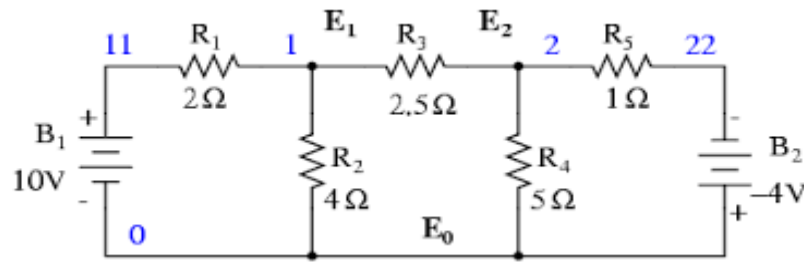
b) Derive the star to delta and delta to star transformation
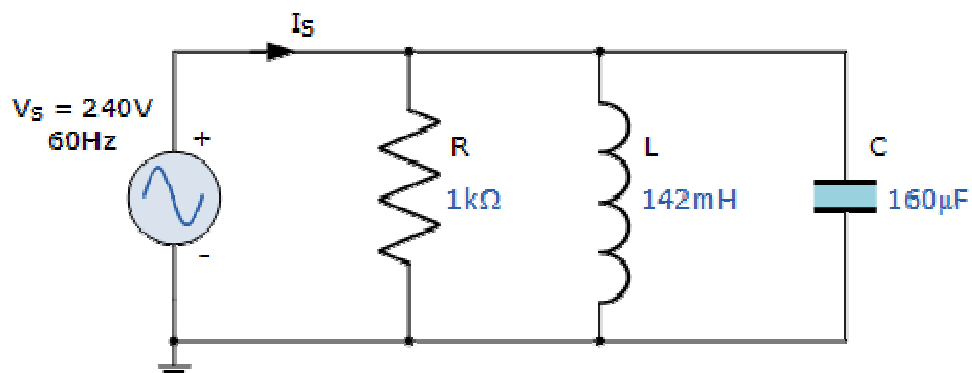
technique?

(OR)

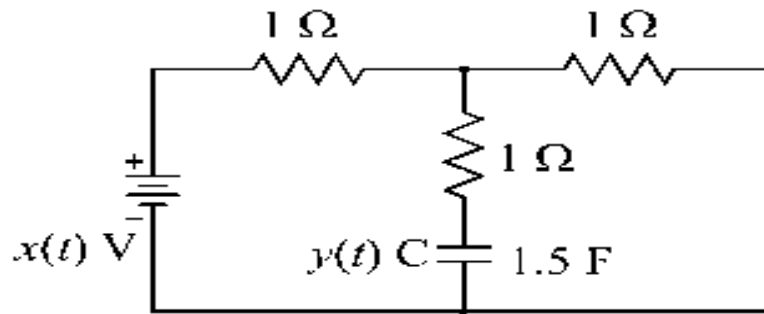4 a) Using Nodal Analysis obtain the voltages
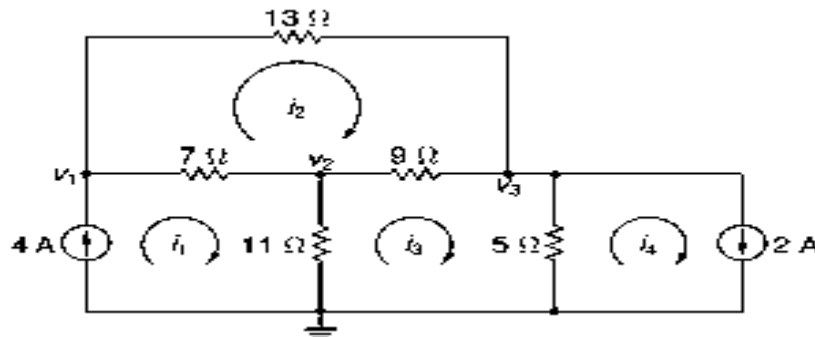
b) Define time period, frequency, angular velocity, form factor
   and peak factor for a sinusoidal wave?

UNIT-III

5 a) Find the current in each every branch of the network

b) Find the total impedance of the circuit for a frequency of 50 Hzs

(OR)

6. a) Define and derive resonant frequency, Quality factor, bandwidth, for a series RLC circuit.

b) Determine the resonant frequency and quality factor for series RLC circuit with R= 10ohms, L= 0.5mH and C = 10 micro Farads with a voltage source of 120v, 50 Hzs supply.
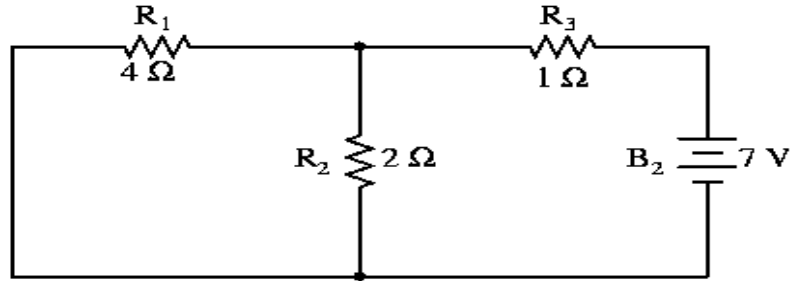
UNIT-IV

7 a) State superposition theorem and verify the same for the below network
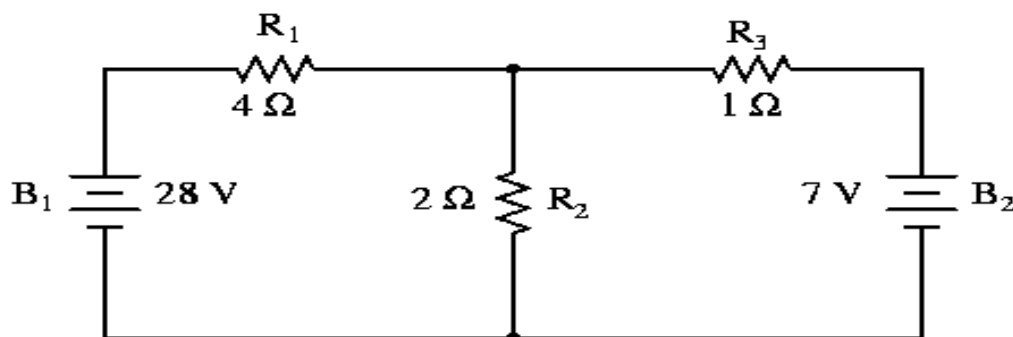
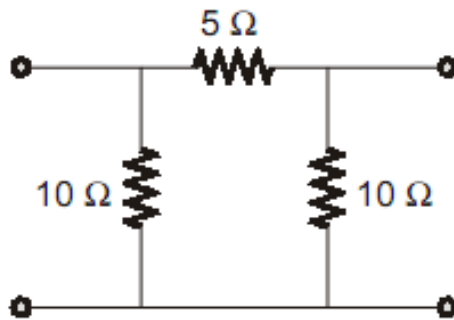b) State and explain Maximum power transfer theorem?
(OR)

8. a) State and Explain Norton's theorem?
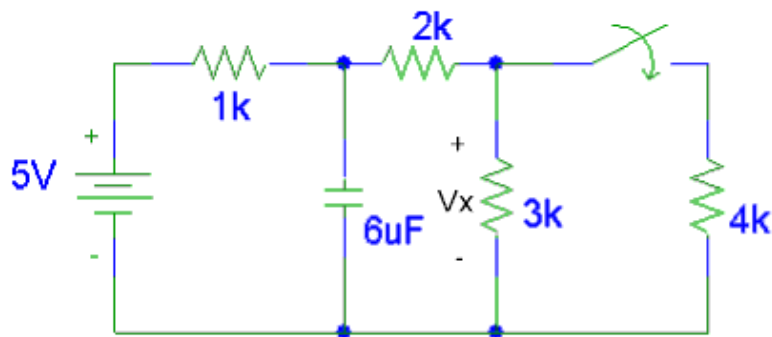   b) Verify reciprocity theorem for the given circuit

UNIT-V

9. a) For the given two port network determine h – parameters

   b) Express Z parameters in terms of ABCD parameters
   (OR)
10. Find the voltage Vx for the given circuit at i) $t=0^+$ ii) $t=0^-$ iii) t= 2msec

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