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ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech I Semester Regular/ Supplementary Examinations, December, 2017

Building Materials and Construction

(Civil 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 in one place only

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UNIT-I

1.	a	Explain the classification of bricks as per BIS and uses of bricks	8M
	b	Describe some major defects of timber with neat sketches	6M

(OR)

2.	a	Based on application enumerate different types of cement with explanation	8M
	b	Compare and contrast the fat lime and hydraulic lime in all their aspects: manufacture, properties and uses	6M

UNIT-II

3.	a	Explain about defects in concrete	8M
	b	Discuss about the different types of mortar and its uses	6M

(OR)

4.	a	Discuss about the properties and uses of steel	7M
	b	Explain the specific uses of metals and Glass materials	7M

UNIT-III

5.	a	What is a raft foundation? When and where is it preferred to other shallow foundations? Explain with a neat sketch.	8M
	b	Discuss about advanced water proofing systems and its uses	6M

(OR)

6.	a	Explain about materials used for Damp Proofing	8M
	b	Discuss about the brick masonry with a neat sketch	6M

UNIT-IV

7.	a	Discuss about different types of flooring	8M
	b	Write a short note about hollow bricks and Ferro cement construction	6M

(OR)

8.	Explain about the following		6M
	(a) Stone lintels & brick lintels.		
	(b) Steel lintels & RCC lintels.		4M
	(c) Lintel and Arch		4M

UNIT-V

9.	a	Why is formwork necessary? What are the requirements of formwork	8M
	b	Explain about shoring and underpinning	6M

(OR)

10.	a	What are the constituents of varnish? Explain about the application of varnishing	8M
	b	Explain about white washing and colour washing? Explain the uses	6M

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CODE: 16EE1001   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech. I Semester Reg/ Suppl. Examinations, December, 2017

BASIC ELECTRIC CIRCUIT ANALYSIS

(Electrical and Electronics Engineering)

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

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) State and explain KVL and KCL with examples.   6 M

   (b) Reduce the network shown in Fig.1, by source transformation technique, to obtain   8 M
   the current in the 12 Ω resistor.
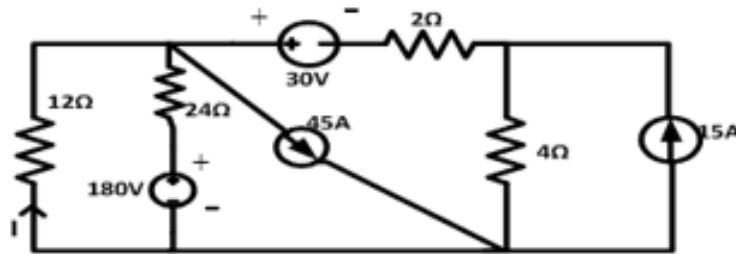
Fig.1

(OR)

2. (a) Explain in detail about Independent and Dependent sources.   6 M

   (b) Find R_{ab} across the terminals a-b of the network shown in Fig.2.using star delta   8 M
   conversion technique
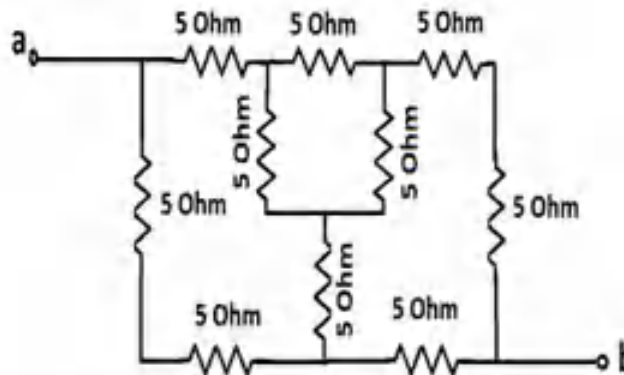
Fig.2

UNIT-II

3. (a) A current wave form flowing through an inductor of 1mH is shown in the Fig.3.Obtain and sketch the wave form of the voltage across the Inductor.   8 M

Fig.3
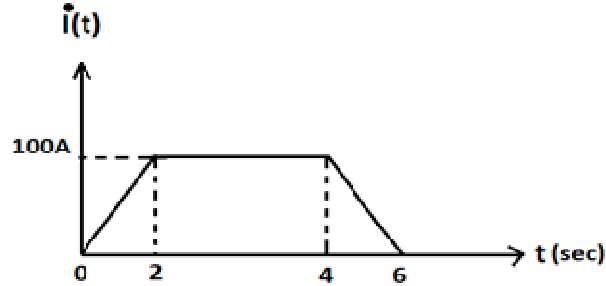
(b) State and explain Faraday's Law of electromagnetic induction. What are statically and Dynamically induced e.m.f s.   6 M

(OR)

4. (a) In the circuit shown in Fig.4, Use the loop analysis to find the power delivered to the 4Ω resistor.   8 M
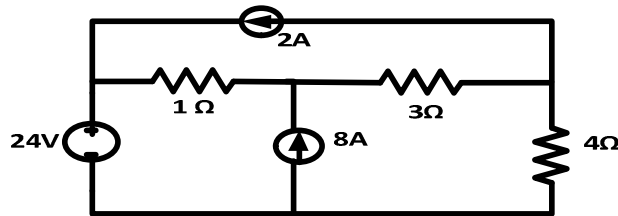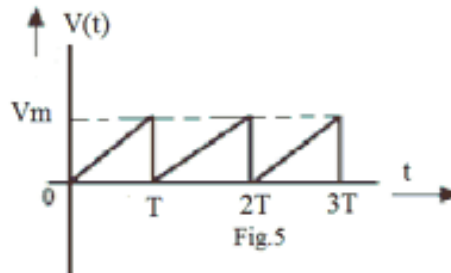

Fig.4

(b) Define Self Inductance and Mutual Inductance and Coefficient of Coupling.Deirve the relation between them.   6 M

UNIT-III

5. (a) Find the Average and R.M.S values of the Saw-tooth wave form shown in below Fig.5.   6 M

Fig.5

(b) A 4Ω resistor is connected in series with a 100 mH inductor across a 100V, 50Hz voltage source, Find   8 M
(i)Impedance of the circuit   (ii) Input current
(iii) Drop across the resistor and inductance
(iv) Power factor of the circuit (v) Real power consumed in the circuit

(OR)

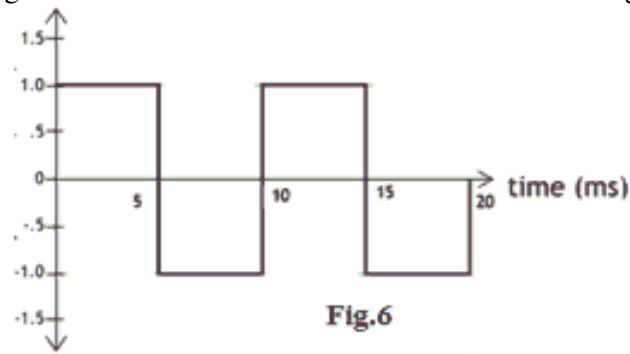6. (a) Find the Average and R.M.S values of the wave form shown in Fig.6.　　　6 M

Fig.6

   (b) The voltage of a circuit is V=200 sin (ωt+30^0) and the current is　　　8 M
   I=50 sin (ωt+60^0).Calculate
      (i)the average power ,reactive power and apparent power
      (ii)the circuit elements if ω=100π rad/sec

UNIT-IV

7. (a) Explain about series resonant circuit in detail.　　　6 M
   (b) A series circuit with R=10 Ω ,L=0.1H and C=50μF has an applied voltage　8 M
   V=50$\llcorner$0^0 with a variable frequency. Find the resonant frequency, the value of
   frequency at which maximum voltage occurs across the inductor and the value of
   frequency at which maximum voltage occurs across the capacitor?

(OR)

8. (a) For the circuit shown in below fig.7, draw the locus of the current. Mark the range　8 M
   of I for maximum and minimum values. Assume X_c=50 Ω,R=10Ω ,V=400Volt.

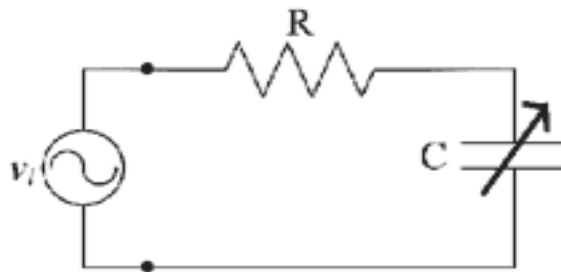Fig.7

   (b) Why does the current lag behind the source voltage at frequencies below resonance　6 M
   in a parallel resonance circuit?

UNIT-V

9. (a) Two wattmeters are used to measure power in a three phase wire load. Determine　8 M
   the total power, power factor and reactive power if the two wattmeters read
   (i)1000 Watt each ,both positive   (ii)1000 Watt each ,but of opposite sign.
   (b) A symmetrical three-phase 100V,three wire supply feeds an unbalanced star　6 M
   connected load, with impedances of the load as
   $$Z_R = 5\angle 0^3\ \Omega, Z_Y = 2\angle 90^0\ \Omega, Z_B = 4\angle -90^0\ \Omega$$

   Find the (i) Line currents (ii) Voltage across the impedances and
      (iii) The displacement neutral voltage

(OR)

10. (a) A balanced three-phase Y-source with Phase voltage of V_P =210V drives a Y-　7 M
   connected three-phase load with phase impedance Z_A=80+j0Ω ,Z_B=60+j90 Ω,and
   Z_C=0+ j80Ω.Caculate the line currents and total complex power delivered to the
   load.Assume that the neutrals are connected.
   (b) Derive phase and line voltage, current relations in a balanced star connected　7 M
   system with neat phasor diagrams.

3 of 3

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ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Regular & Supplementary Examinations, December-2017
NETWORK ANALYSIS
(Electronics & Communication Engineering)

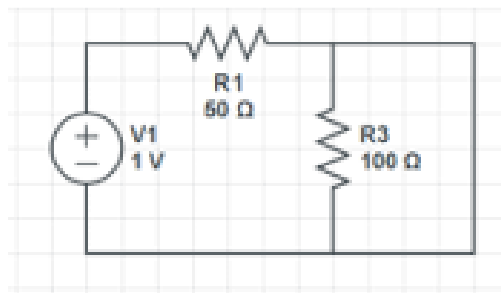Time: 3 Hours   Max Marks: 70M

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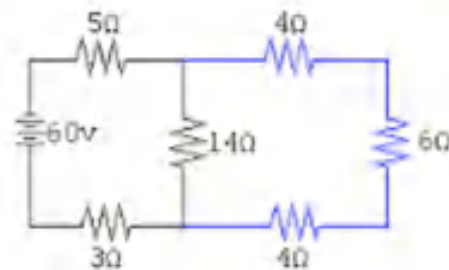All parts of the question must be answered in one place only

UNIT-I

1 a) What are active and passive elements? Derive voltage-current relation, power and Energy of the network elements?

b) Find the current I in the circuit

(OR)

2. a) Find the voltage drop across 6 ohms resistance

b) Obtain the current in series 1Kohm resistor using source transformation technique
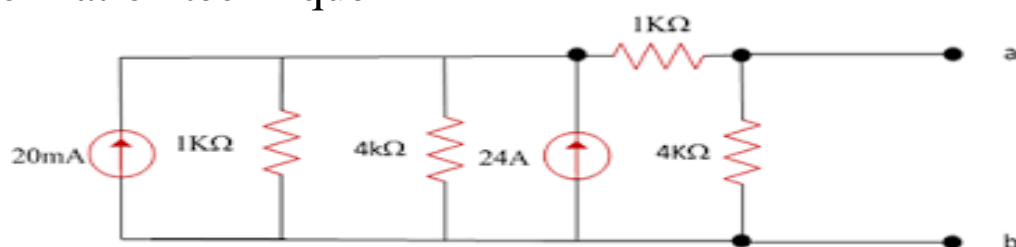
UNIT-II

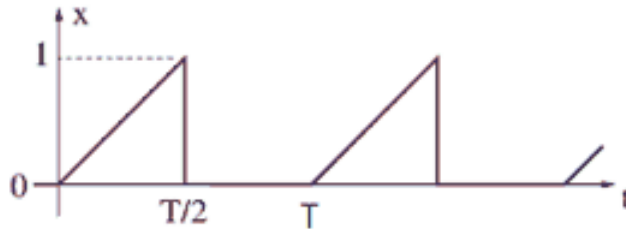3 a) Define kirchoff's laws and explain them with an example?

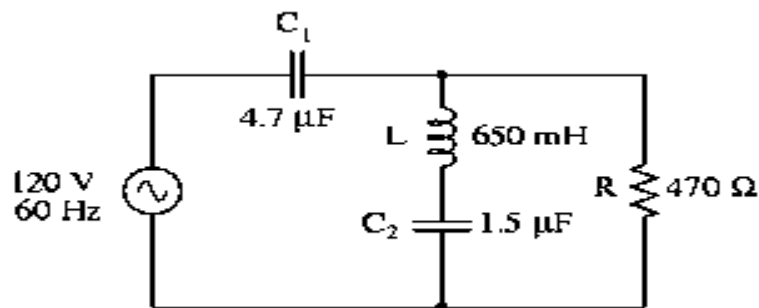   b) Find the current in 10V source using star delta transformation technique?

R_1 12 Ω, R_2 18 Ω, R_3 6 Ω, R_4 18 Ω, R_5 12 Ω, 10 V
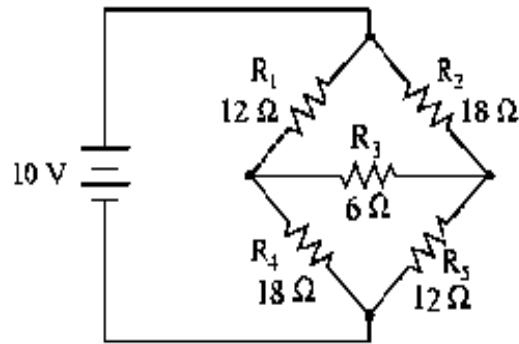
(OR)

4 a) Derive the average and rms values for a sinusoidal wave form.

   b) Find the average and rms value for the below waveform

X, 1, 0, T/2, T, t
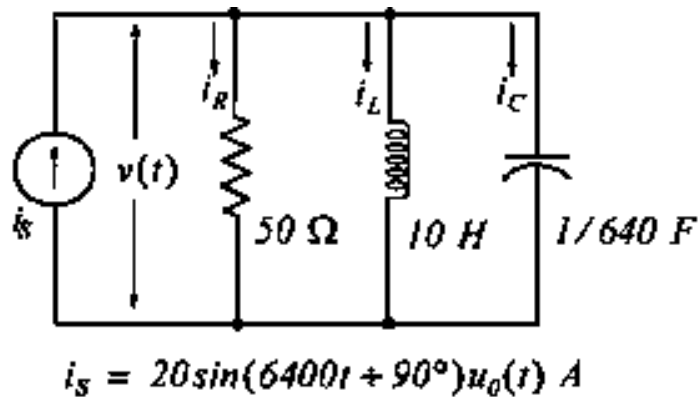
UNIT-III

5 a) Find the total impedance and total current for the below circuit

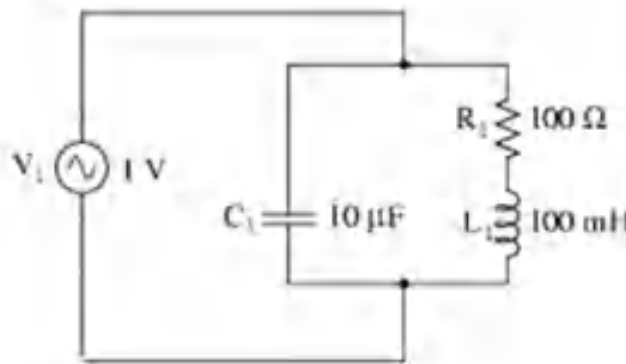C_1 4.7 µF, L 650 mH, 120 V 60 Hz, C_2 1.5 µF, R 470 Ω

b) Obtain the phasor diagrams for pure resistance, pure inductance and pure capacitance with a sinusoidal source.

(OR)

6 a) obtain the currents in every branch
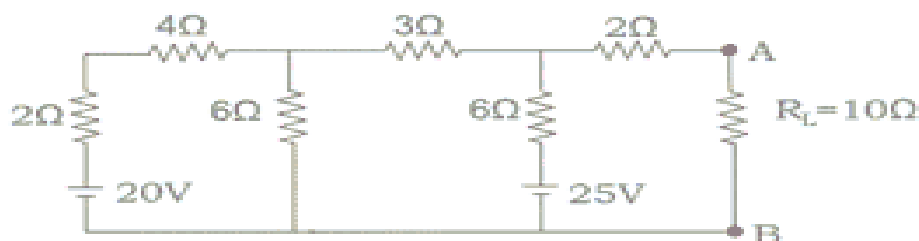

$$i_s = 20sin(6400t + 90°)u_0(t) \ A$$

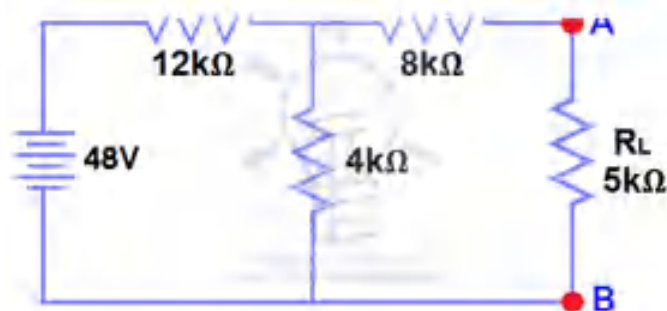b) Find the resonant frequency for given circuit

UNIT-IV

7 a) State and verify Superposition Theorem.

b) State Thevinen's theorem and find the thevinen equivalent for the given circuit

(OR)

8 a) State and verify Reciprocity theorem

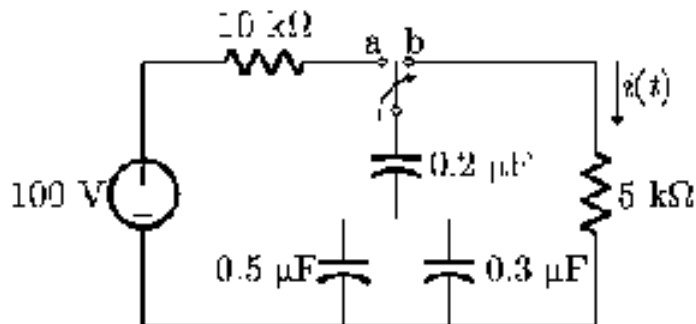b) Find the maximum power delivered in the load using maximum power transfer theorem

UNIT-V

9 Derive Z , Y and Hybrid parameters taking an example.

(OR)

10 a) Derive current for source free RL Series circuit.

b) Determine the current for the given circuit

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Answer ONE Question from each Unit
All Questions Carry Equal Marks
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UNIT-I

1. Draw a vernier scale of R.F. = 5 to read 1/5 cm and 1/25 cm   14M
and to measure up to 5 cm. Mark on a scale distances of 2.12
cm and 4.29 cm.

(OR)

2. The major axis of an ellipse is 150 mm and minor axis is 100   14M
mm. Find the foci and draw the ellipse by arcs of circle
method and also draw another ellipse at a point on it 25 mm
above the major axis.

UNIT-II

3. A 100 mm long line is parallel to and 40 mm above H.P. Its   14M
two ends are 25mm and 50 mm in front of the VP
respectively. Draw its projections and find its inclinations
with the VP.

(OR)

4. A point P is 15 mm above the HP and 20 mm in front of V.P.   14M
Another point Q is 25 mm behind the VP and 40 mm below
H.P. Draw the projections of P and Q keeping the distance
between their projectors equal to 90 mm. Draw straight lines
joining their top views and front views

UNIT-III

5. Draw a regular hexagon of 40 mmm side, with its two sides   14M
vertical. Draw a circle of 40 mm diameter in its centre. The
figure represents a hexagonal plate with a hole in it and
having its surface parallel to the VP. Draw its projections
when the surface is vertical and inclined at 300 to the V.P.
Assume the thickness of the plate to be equal to that of a line.

(OR)

6. Draw the projections of a pentagonal prism, base 25 mm side   14M
and axis 50 mm long, resting on one of its rectangular faces
on the ground, with the axis inclined at 45o to the VP.

UNIT-IV

7. A hexagonal pyramid, base 25 mm side and axis 50 mm long, has an edge of its base on the ground. Its axis is inclined at 300 to the ground and parallel to the V.P. Draw its projections.   14M

(OR)

8. Draw the projections of a cone, base 75 mm diameter and axis 100 mm long , lying on the ground on one of its generators with the axis parallel to the VP. Draw its projections.   14M

UNIT-V

9. Draw (i) Front View (ii) Top View (iii) Side View (All Dimensions are in mm)   14M
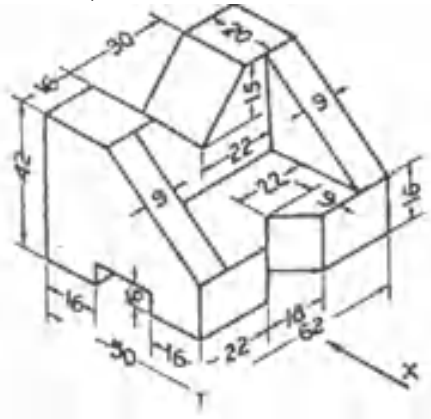
(OR)

10. Draw the isometric view. (All Dimensions are in mm)   14M