AR18

CODE: 18EST105 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech II Semester Suppl. Examinations, September, 2023

BASIC ELECTRONICS

(MECHANICAL ENGINEERING)

Time: 3 Hours **Max Marks: 60**

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)	Discuss static and dynamic resistances in PN junction diode.	6M
	b)	What is Zener breakdown? Explain how zener diode acts voltage regulator with an example.	6M

(OR)

2.	a)	Derive the expression for diode current.	6M
	b)	With neat sketch explain the operation of full wave bridge rectifier.	6M

UNIT-II

3.	a)	Discuss the input and output characteristics of a bipolar junction transistor in common emitter configuration.	6M
	b)	Explain the operation of NPN transistor with neat diagram and discuss different current components.	6M

(OR)

4.	a)	Derive the relation between I_C, I_B and I_{CBO} in a bipolar junction transistor.	6M
	b)	Explain N-channel JFET volt-ampere characteristics with neat diagrams.	6M

UNIT-III

5.	a)	Explain the CE amplifier action with necessary diagrams.	6M
	b)	Derive the expressions for current gain and input impedance of CE amplifier	6M

(OR)

6.		Draw and explain AC equivalent circuit of CE amplifier.	12M

UNIT-IV

7.	a)	Draw and explain the general block diagram of current series feedback amplifier	6M
	b)	Explain BJT based RC-phase shift oscillator with neat diagram and deduce the expression for frequency of oscillation.	6M

(OR)

8.	a)	Draw the general block diagram of voltage series feedback amplifier and derive the expressions for input and output impedances with feedback.	6M
	b)	Explain Wien bridge oscillator with neat diagram and deduce the expression for frequency of oscillation.	6M

UNIT-V

9.	a)	Draw the pin diagram and schematic symbol of a typical Op - Amp IC 741 and explain the function of each pin.	6M
	b)	Define the following electrical parameters: CMRR, output voltage swing and slew rate.	6M

(OR)

10.	a)	What is an op-amp? Explain the characteristics of an ideal Op - Amp.	6M
	b)	Explain how an Op - amp can be used as summing amplifier?	6M

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AR18

CODE: 18EET102 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech II Semester Suppl. Examinations, September, 2023

ELECTRIC CIRCUIT THEORY

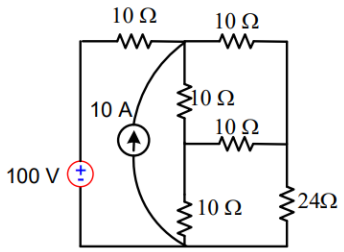
(ELECTRICAL AND ELECTRONICS ENGINEERING)

Time: 3 Hours **Max Marks: 60**

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

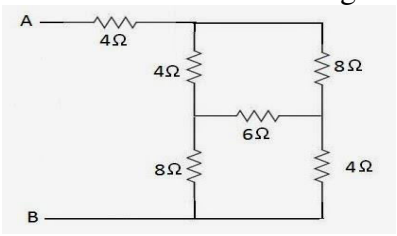
UNIT-I

1. a) State and explain Kirchhoff's laws? 6M
   b) In the circuit shown in Figure determine all branch currents by mesh current analysis. 6M

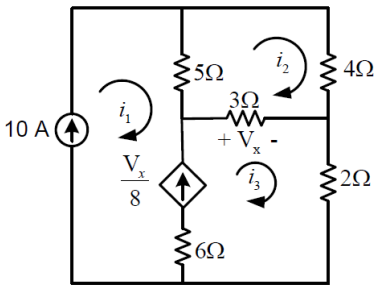


(OR)

2. a) Find the equivalent resistance between A & B in the given network. 6M



   b) Find the loop currents i_1, i_2, i_3 in the circuit shown in Figure 6M



UNIT-II

3. a) Obtain the expression for resonant frequency, bandwidth and Q-factor for parallel R-L-C circuit. 6M
   b) Explain about the concept of series R-L-C resonant circuit. 6M

(OR)

4. a) Write the difference between Series Resonance and Parallel Resonance 6M
   b) Derive the expression for bandwidth of series resonant circuit and its relation with Q 6M

UNIT-III

5. a) State and explain Thevenin's theorem. 6M
   b) Explain Nortons Theorems with example. 6M

(OR)

6. a) State and explain the superposition theorem 6M
b) From the following network verify Reciprocity theorem. 6M

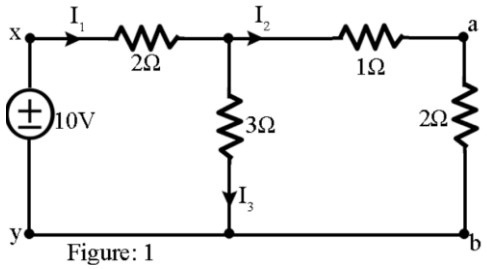
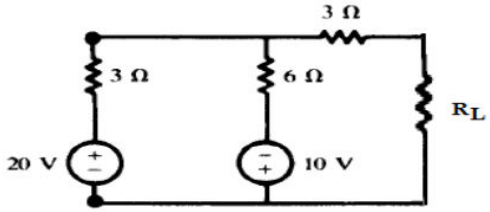


Figure: 1

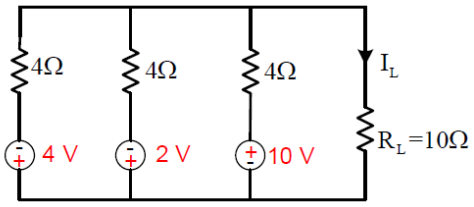
UNIT-IV

7. a) Define Maximum Power Transfer theorem and explain with example. 6M
b) Find the value of R_L for maximum power transfer and find the maximum power. 6M



(OR)

8. a) State and explain Milliman's theorem. 6M
b) Using Millman's theorem find the current I_L through R_L for the network shown in Figure. 6M



UNIT-V

9. a) Derive the relations of impedances in star-to-delta transformation 6M
b) A three phase Y connected balanced load is connected by 400V, 50 Hz 3 phase supply. The impedance of each phase is 10 ohm. What is the total three phase power? 6M

(OR)

10. a) What are the advantages of three phase systems? 6M
b) Explain relationship of Line and Phase Voltages and Currents in a Star Connected System. 6M

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AR18

CODE: 18ECT102 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech II Semester Suppl. Examinations, September, 2023

NETWORK THEORY

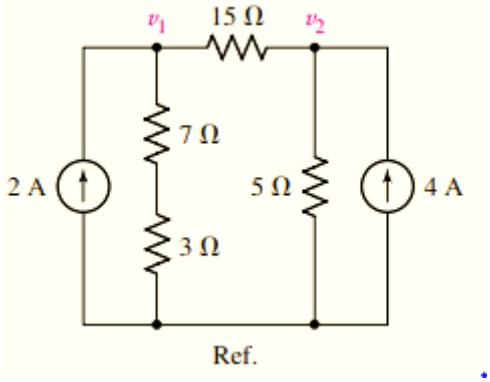
(ELECTRONIS AND COMMUNICATION ENGINEERING)

Time: 3 Hours **Max Marks: 60**

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

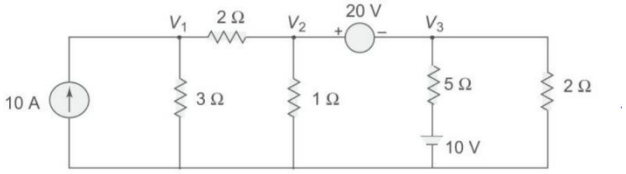
UNIT-I

1. a) State and explain Thevenins theorem. 4M
   b) Determine the current flowing left to right through the 15 Ω resistor of Fig 8M

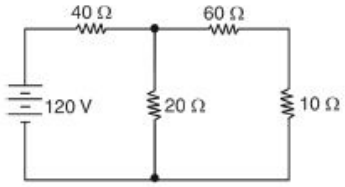


(OR)

2. a) Determine the current in the 5 V resistor for the circuit shown in 6M

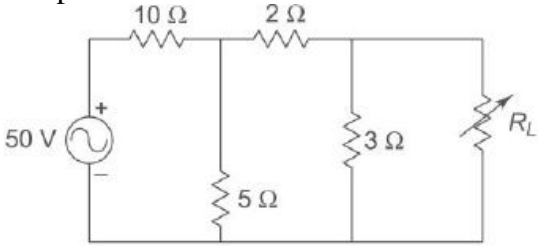


   b) Determine the Power delivered by the 120 Volt source 6M



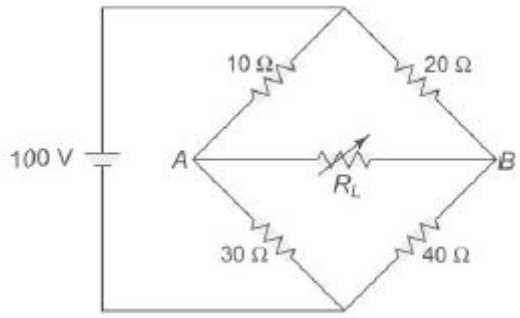
UNIT-II

3. a) Explain maximum power transfer theorem with necessary equations. 6M
   b) Determine the maximum power delivered to the load in the circuit shown 6M



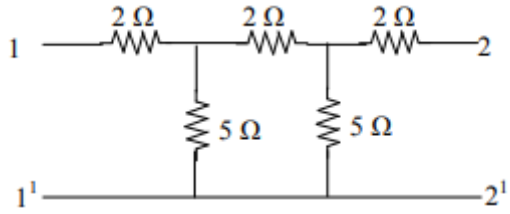
(OR)

4. a) State maximum power transfer theorem. 4M
   b) Determine the load resistance to receive maximum power from the source; also find the maximum power delivered to the load in the circuit shown in fig 8M



UNIT-III

5. a) Define Z Parameters and the write the necessary equations. 6M
   b) Determine the Y- parameters of the network shown in figure: 6M

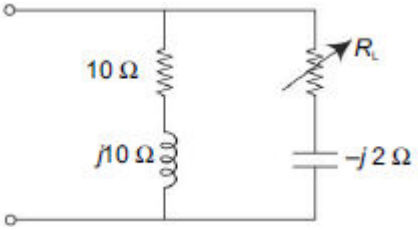


(OR)

6. a) Discuss the parallel connection of two port networks with neat diagram. 6M
   b) The Z-parameters of a two port network are Z_{11}=15 Ω, Z_{22}=24 Ω, Z_{12}=Z_{21}=6 Ω. Determine ABCD and h-parameters. 6M

UNIT-IV

7. a) Determine the relationship between the resonance frequency fo and the half power frequencies f1 and f2 in a series resonating circuit. 6M
   b) Calculate the value of R_L in the circuit shown in fig. to yield resonance. 6M



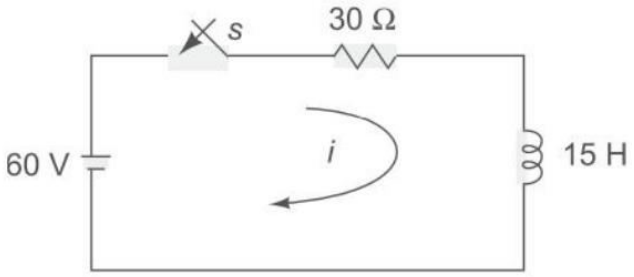
(OR)

8. a) Obtain the expression for resonance frequency for RLC series circuit. 6M
   b) A 220V, 100Hz ac source supplies a series RLC circuit with a capacitor and a coil. If the coil has 50mΩ resistance and 5mH inductance, find at resonance frequency of 100Hz what is the value of capacitor? Also calculate the Q factor and half power frequencies of the circuit. 6M

UNIT-V

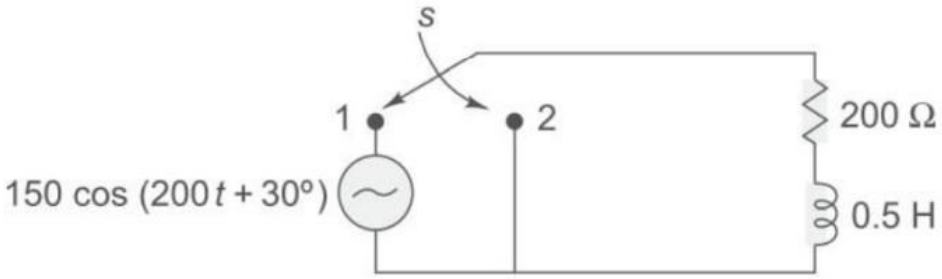
9. a) Derive the expression for transient current for RL circuit when the excitation in DC 6M

   b) A series RL circuit with R 5 30 V and L 5 15 H has a constant voltage V 5 60 V applied at t 5 0 as shown in Fig. Determine the current i, the voltage across resistor and the voltage across the inductor. 6M



(OR)

10. a) For the circuit shown in Fig., determine the transient current when the switch is moved from the position 1 to the position 2 at t = 0. The circuit is in steady state with the switch in position 1. The voltage applied to the circuit is Vs= 150 cos (200t + 30°)V. 12M



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AR16

CODE: 16ME1001 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech II Semester Suppl. Examinations, September, 2023

ENGINEERING DRAWING

(Common to EEE & ECE Branches)

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. Construct a diagonal scale with RF = 1/50, showing metres, decimetres and centimetres, to measure up to 5 metres. Mark a length 4. 75 m on it. 14M

(OR)

2. Draw an ellipse whose major and minor diameters are 150 mm and 100 mm respectively. Use concentric circles method. 14M

UNIT-II

3. A Line AB, 90 mm long, is inclined at 30^0 to the H.P. Its end A is 12 mm above the H.P. and 20 mm in front of the V.P. Its front view measures 65 mm. Draw the top view of AB and determine its inclination with the V.P. 14M

(OR)

4. A point P is 15 mm above the H.P. and 20 mm in front of the V.P. Another point Q is 25 mm behind the VP and 40 mm below the H.P. Draw the projections of P and Q keeping the distance between their projectors equal to 90 mm. draw straight lines joining (1) their top views and (2) their front views. 14M

UNIT-III

5. Draw the projections of a rhombus having diagonals 125 mm and 50 mm long, the smaller diagonal of which is parallel to both the principal planes while the other is inclined at 30^0 to the HP. 14M

(OR)

6. Draw the projections of a pentagonal sheet of 26 mm side, having its surface inclined at 30° to VP. Its one side is parallel to VP and inclined at 45° to HP? 14M

UNIT-IV

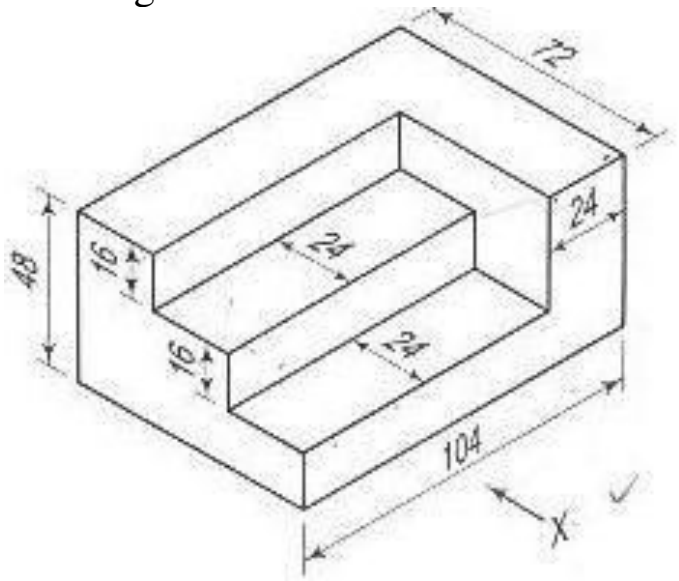
7. Draw the projections of a cone, base 75 mm diameter and axis 100 mm long, lying on the H.P. on one of its generators with the axis parallel to the V.P. 14M

(OR)

8. A hexagonal pyramid resting on one of its triangular face on HP with axis parallel to VP. Side of base is 30mm and axis length 80mm. Draw its projections. 14M

UNIT-V

9. Draw the front view, top view and left hand side view of the block shown in figure shown below. 14M



(OR)

10. Draw the isometric view of the cylinder of length 75 mm and diameter 50mm. 14M

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