
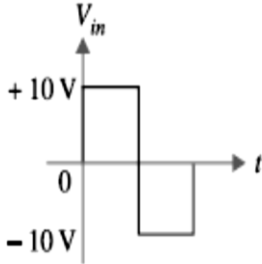
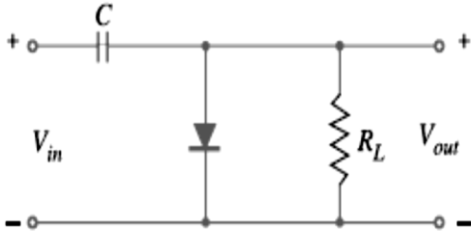
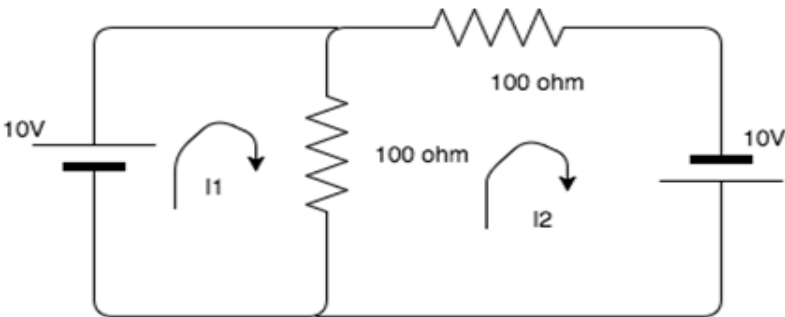


Name: Enrolment No:	
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UPES
End Semester Examination, May 2024

Course: Basic Electrical & electronics engineering Program: B.Tech. -ADE, ME, ASE, CE, FSE Course Code: ECEG 1004 No. of pages : 4	Semester: II Time : 03 hrs. Max. Marks: 100
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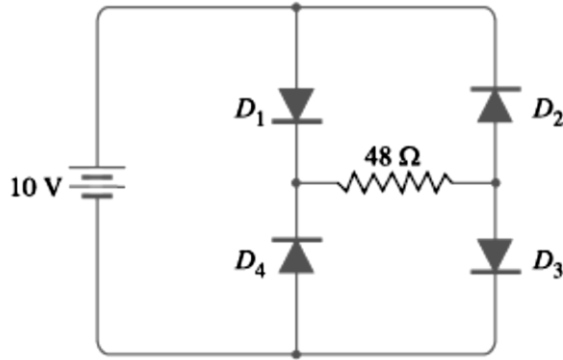
SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	For a common base connection, the current amplification factor is 0.9. If the emitter current is 1mA, determine the value of base current.	4	CO1
Q 2	The circuit shown in the figure determine the minimum and peak values of the clamped output? <div style="display: flex; justify-content: space-around; align-items: center;">   </div>	4	CO1
Q 3	Convert the following in binary from decimal. (i) 121 (ii) 195 (iii) 106 (iv) 66	4	CO2
Q 4	Show by means of a diagram how you normally connect external batteries in (i) pnp transistor (ii) npn transistor. (Take common base configuration).	4	CO1
Q 5	Find the value of the currents I1 and I2. 	4	CO2

SECTION B
(4Qx10M= 40 Marks)

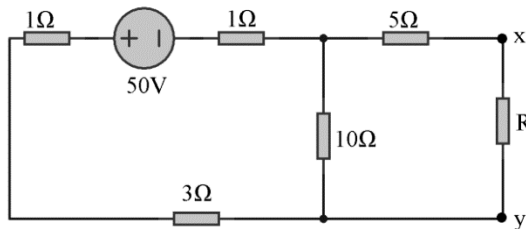
Q 6

Calculate the current through $48\ \Omega$ resistor in the circuit shown in figure. Assume the diodes to be of silicon (0.7V drop in forward bias) and forward resistance of each diode is $1\ \Omega$.



OR

Determine the value of 'R' at which the transfer of maximum power occurs. Additionally, identify the maximum power across 'R'.

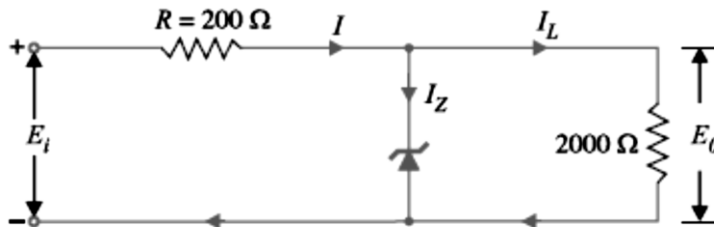


10

CO2

Q 7

Over what range of input voltage will the zener circuit shown in the figure maintain 30V across $2000\ \Omega$ load, assuming that series resistance $R = 200\ \Omega$ and zener current rating is 25mA ?



10

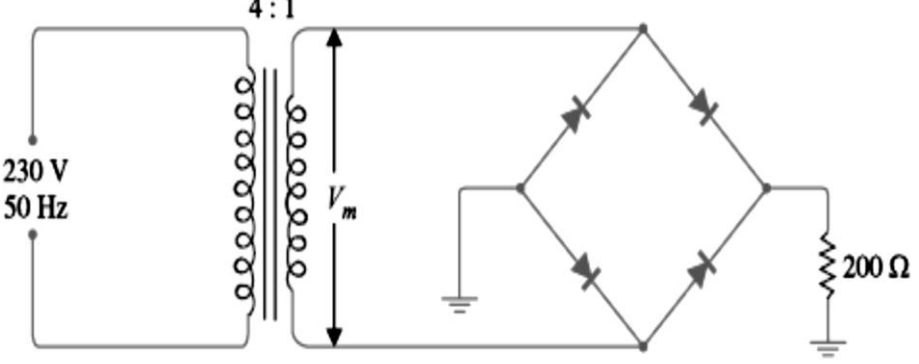
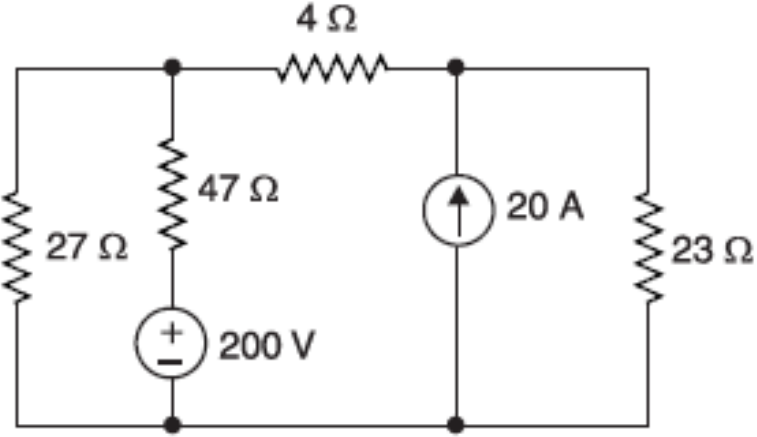
CO3

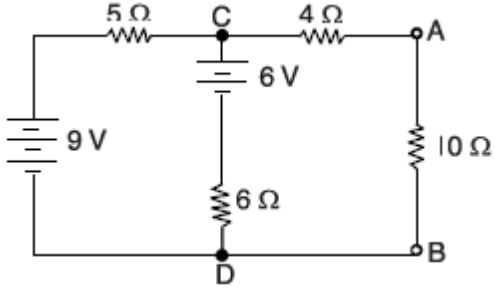
Q 8

The bridge type circuit is shown in the figure, the diodes are assumed to be ideal. Find: (i) d.c. output voltage (ii) peak inverse voltage (iii) output frequency.

10

CO2

			
<p>Q 9</p>	<p>(a) Simplifying the following expression using Boolean algebraic techniques.</p> $Y = A \cdot B \cdot \bar{C} \cdot \bar{D} + \bar{A} \cdot B \cdot \bar{C} \cdot \bar{D} + \bar{A} \cdot B \cdot C \cdot \bar{D} + A \cdot B \cdot C \cdot \bar{D}$ <p>(b) Draw the logic circuit for the following Boolean expressions.</p> $Y = (\bar{E}G + B)H$	<p>10</p>	<p>CO3</p>
<p>SECTION-C (2Qx20M=40 Marks)</p>			
<p>Q 10</p>	<p>A 55 KVA single phase transformer has primary windings of 460 turns and secondary windings of 160 turns. The input side of transformer is supplied with voltage of 2500V, 50 Hz supply. Calculate (a) secondary voltage (b) primary full load current (c) secondary full load current and (d) maximum value of flux.</p> <p style="text-align: center;">OR</p> <p>Deduce the current through 23 ohm resistance for the given circuit using superposition theorem.</p> 	<p>20</p>	<p>CO3</p>

Q 11	<p>Apply the concept of thevenin's theorem and find the current through 10 ohm resistance for the given figure.</p> 	20	CO4
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