

Indian Institute of Information Technology, Sri City, Chittoor

Name of the Exam: Basic Electronic Circuits

Duration: 60 mins

Max. Marks: 20

- Instructions:
1. Closed book exam.
 2. Calculator is allowed.
 3. Write your name, roll no and page no on each page.

Marks Table:

	Q1	Q2	Q3	Q4	Total
Max. marks	5	5	5	5	20

Q1.

- (a) Determine i_1 and i_2 in the circuit shown in Fig.1.

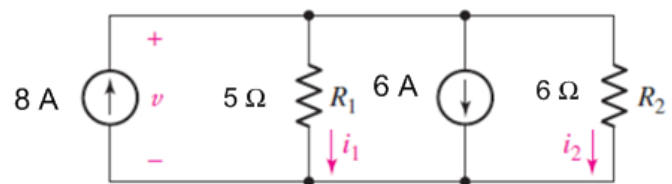


Fig. 1.

- (b) If a diode gives a current $I = 2$ mA under the forward condition with voltage $V = 707$ mV at 20°C , $V_T = 25.3$ mV. Find the saturation current I_S , assume $n = 1$.

- Q2. Determine voltage across and current through each element in the circuit shown in Fig. 2. Also calculate the power absorbed by each element, check whether the total power generated is equal to power absorbed in the given circuit. (follow passive sign convention)

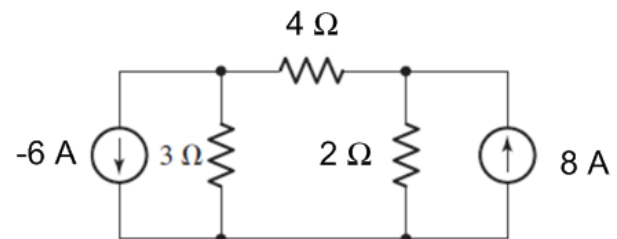


Fig. 2.

- Q3. Design a bridge rectifier circuit with diodes having 0.5 V drop during the forward bias operation, an ac signal of 250 V(peak), 50 Hz, is connected via 12:1 transformer, draw the o/p voltage across the load (3.3 kΩ). What is the average voltage across the load and the average current through the load?

- Q4. Consider the circuit shown in Fig. 3, if $R_1 = 5$ kΩ, and $R_2 = 3$ kΩ calculate V_B , V_C , V_E , I_C , I_B , and I_E , also determine whether the transistor is in active mode or in saturation mode. Assume $\beta = 90$, and $V_{BE} = 0.7$ V.

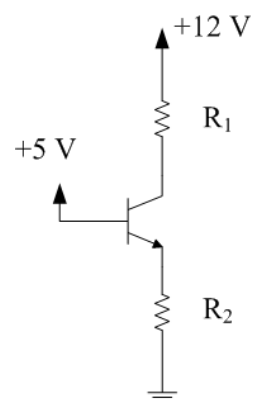


Fig. 3