Indian Institute of Information Technology, Sri City, Chittoor

Name of the Exam: Basic Electronic Circuits   Duration: 60 mins   Max. Marks: 20

Instructions:
1. Do not copy from any source, if found you will be penalized according to institute norms
2. Scientific calculator is allowed
3. Write neatly in A4 size sheets
4. Write Question paper code on all pages
5. Write your name and roll number in all pages
6. Scan properly and convert into .pdf format as single file
7. Name the file as below, before you upload in the Google form
   a. 2020 Batch Please enter last five digits of your roll number
   b. 2018 Batch please enter your attendance as 18xxxxx, xxxxx are the last five digits of your roll number
   c. 2019 Batch please enter your attendance as 19xxxxx, xxxxx are the last five digits of your roll number

Paper code B

Marks Table:

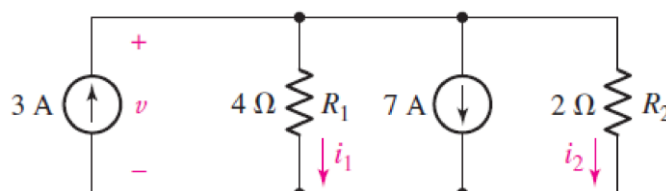|	Q1	Q2	Q3	Q4	Total
Max. marks	5	5	5	5	20

Q1.
(a) Determine i_1 and i_2 in the circuit shown in Fig. 1.

Fig. 1.

(b) Three water heaters are connected in four buckets to heat water in a typical Indian home. The resistance of each coil is 50 Ω. What is the equivalent resistance offered by these three water heaters?

2. 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)
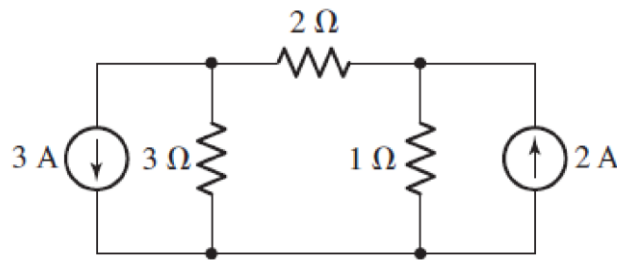

Fig. 2.

3. A full wave bridge rectifier circuit is connected to a resistive load to the supply through a transformer. The forward potential drop in each diode is 0.7 V. Supply voltage is 220 V, 50 Hz. Draw supply and load voltage waveforms, clearly indicating peak magnitudes and time periods. Also, find out the average voltage across the load and the average current through the load if the load resistance is 2.2 KΩ. Given transformer turns ration 10:1.

4. In an NPN BJT amplifier circuit, the DC base and collector voltages are 5 V and 15 V respectively. The collector resistance is 2 kΩ and base resistance is 100 kΩ.
Given V_{BE} = 0.7 V and β = 100. Draw the circuit diagram and calculate V_{CE}, V_{CB} and transistor currents.