

Faculty of Science

B.Sc. (Electronics) I Year, CBCS - I Semester Examination, July 2017

Paper-I (Circuit Analysis)

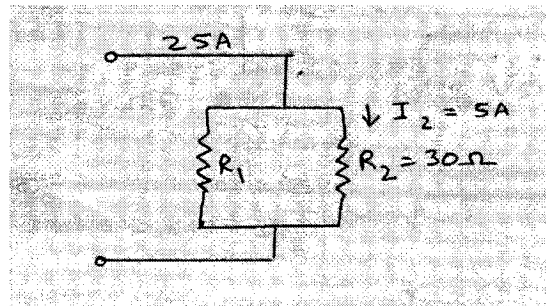
Time: 3 h

Max Marks: 80

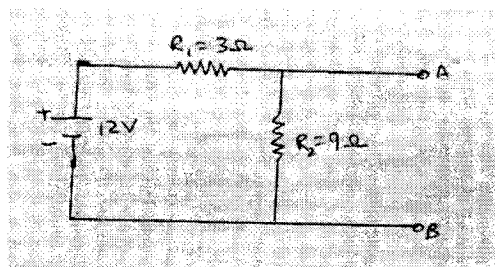
Section-A

I. Answer all any **Five** of the following questions. (5x4=20 Marks)

- Find the peak, average, RMS and frequency Values of an A.C. Current represented by $i=28.4 \sin 628t$.
- Determine the resistance R_1 so that current will divide as show in the following network



- Explain Superposition theorem.
- Determine the Norton's equivalent circuit which is shown below.



- Discuss any high pass filter.
- Calculate the Capacitive reactance of a 220 mF capacitor at a frequency of 1KHz and at 20KHz.
- A Series resonant circuit has a resistance of $1K\Omega$ and half power frequencies of 20 and 100KHz. Determine a) Bandwidth and b) Resonant frequency.
- Draw the block diagram of CRO.

Section-B

II. Answer all of the following questions. (4x15=60 Marks)

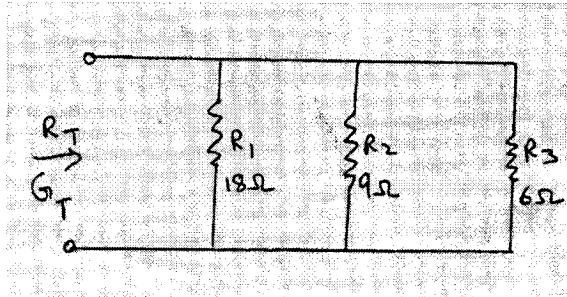
- (a) What is a Phasor? Explain Phasor notation and describe how they can be used to represent Sinusoidal Signals.

What will be resultant expression in rectangular form if the given expression is $12j (17 < 180^\circ)$

(OR)

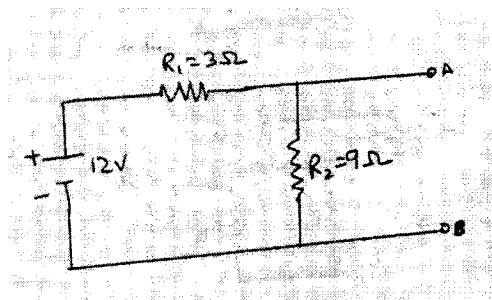
(b) State and explain Kirchoff's laws with examples.

Determine the conductance and resistance of the network given below.



10.(a) State and prove Thevenin's theorem. Explain how is Thevenin's equivalent circuit is related to Norton's equivalent circuit?

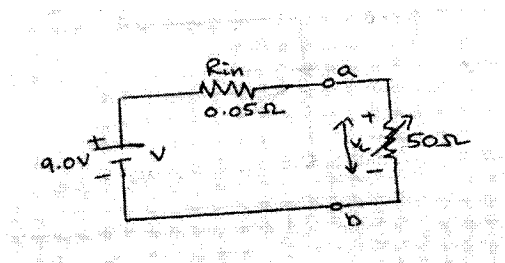
Determine the Norton's equivalent circuit which is shown below.



(OR)

(b) State and prove maximum power transfer theorem using A.C. Source.

Determine terminal voltage V_L and the efficiency when the value of the load resistor is $R_L = 50\Omega$ of the following circuit.



11.(a) Explain the growth and decay of Current in RL circuit. How do you find time constant from the Curves.

(OR)

(b) Define an integrator. Discuss how a low pass filter acts as an integrating circuit.

Draw its input and output wave forms.

12.(a) Define Resonance. Obtain an expression for the impedance of a Series RLC Circuit at resonance.

An RLC Series circuit consists of a resistance $R=1K\Omega$, an inductance of $L=100\text{ mH}$ and a capacitance $C=10\text{ pf}$. Find a) resonant frequency b) ϕ factor.

(OR)

(b) Draw the schematic diagram of Cathode ray tube and show its principal parts. Briefly describe their functions.
