Total No. of Printed Pages:3

F.E. Semester-I (Revised Course 2019-20)
EXAMINATION AUGUST 2021
Basic Electrical & Electronics Engineering

[Duration: Two Hours]   **[Total Marks:60]**

Instructions: I)   Answer THREE FULL QUESTIONS with ONE QUESTION FROM EACH PART

                 II)   Assume suitable additional data if necessary

Part A

Q.1   a) With the help of neat diagram, Explain the process of Thermal Generating Unit   (8)

            b) Compare an Electrical Circuit with Magnetic Circuit   (6)

   c) Using Nodal analysis, find branch currents in the given DC circuit   (6)
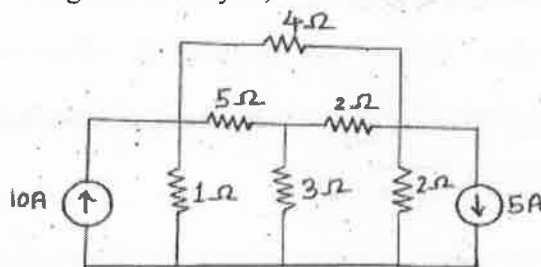
Q.2   a) Two impedances Z1 and Z2 are shown in series with voltage source $V_s=100\angle 0^0$. Find the voltage across each impedance   (8)
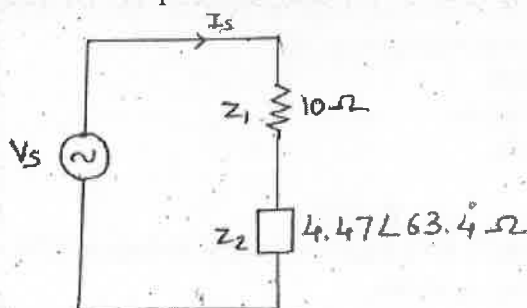
            b) Draw the power triangle and explain the following referring the same diagram.   (8)
                i)   Active Power
                ii)   Reactive Power
                iii)   Apparent Power

            c) With the help of a neat diagram, Explain the principle of operation of single phase transformer   (4)

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Q.3   a) Using Thevenin's Theorem, find the current in 6Ω resistor.   (9)
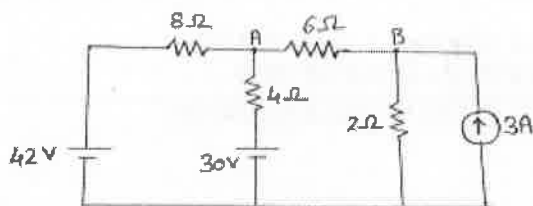
b) Define the following terms with respect to DC circuit   (3)
   i)   Node
   ii)   Branch
   iii)   Junction
c) Using Ampere's Law, find the magnetic flux density due to solenoid.   (8)

Part B

Q.4   a) Explain the concept of Line Regulation w.r.t zener Diode also write the voltage and current expressions for the same   (8)
b) With the help of a neat diagram, explain the working of Bridge Rectifier. Also draw the necessary waveforms   (8)
c) Explain the 1st quadrant operation of P-N junction diode   (4)

Q.5   a) Draw the neat circuit diagram for zener voltage regulator and explain its operation   (8)
b) Write a brief note on LED   (8)
c) Discuss the limits of operation of a transistor   (4)

Q6   a) What do you mean by transistor Biasing? Explain the methods of transistor Biasing.   (10)
b) Explain the following modes of operation in SCR.   (10)
   i)   Forward blocking mode
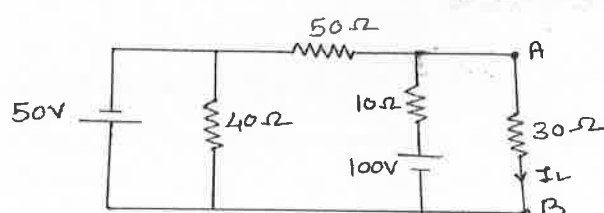   ii)   Forward Conducting mode
   iii)   Reverse blocking mode

Part C

Q.7   a) Determine the range of R_L and I_L for a regulated output voltage of 12V.   (5)
Zener maximum current rating is 32mA.
Zener voltage is 12V.
Input voltage is 66V.

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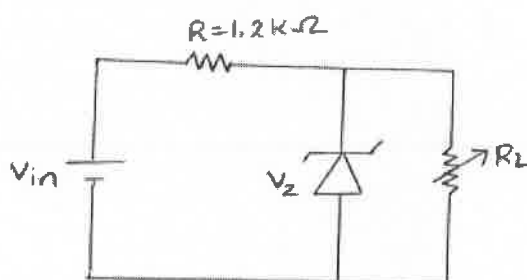
b) Using Norton's Theorem, find the voltage across 30Ω resistor. (8)

c) What is the effect on voltage and current of batteries connected in series and batteries (7)
connected in parallel.
Also list down the applications for the above mentioned cases.

Q.8 a) Draw the VI characteristics &Zener Diode and explain the working. Draw the symbol of (8)
Zener Diode.
b) Draw the input characteristics and output characteristics for BJI in common Emitter (4)
configuration.
c) Fond the power dissipated in 10Ω resister using superposition theorem (8)