

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech I Year II Semester Supplementary Examinations May/June-2024**  
**BASIC ELECTRICAL AND ELECTRONICS ENGINEERING**  
(Common to CE & AGE)

Time: 3 Hours

Max. Marks: 60

(Answer all Six Units 6 X 10 = 60 Marks)

**PART-A****UNIT-I**

- 1 Three resistances of values  $2\Omega$ ,  $3\Omega$  and  $5\Omega$  are connected in series across 20V DC supply. Calculate (i) Equivalent resistance of the circuit. (ii) The total current of the circuit. (iii) The voltage drop across each resistor. (iv) The power dissipated in each resistor. CO2 L2 10M

OR

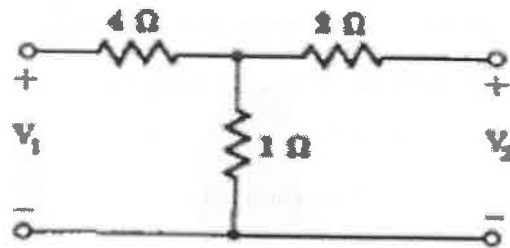
- 2 a Define RMS value, average value, form factor and peak factor. CO1 L1 5M  
b Show the form factor of the sine current is 1.11 CO1 L2 5M

**UNIT-II**

- 3 State and Explain super position theorem by taking example. CO3 L1 10M

OR

- 4 Find the Open circuit parameters for the circuit shown in fig. CO1 L3 10M

**UNIT-III**

- 5 a Explain about principle of operation of DC Motors in detail. CO4 L2 5M  
b Derive Torque equation of dc motor. CO4 L3 5M

OR

- 6 a Explain OC and SC test of a single phase transformer. CO4 L2 5M  
b A 20KVA, 2000V/200V, 50Hz transformer has 66 secondary turns. Calculate the number of primary turns and primary and secondary currents. Neglect losses. CO4 L4 5M

**PART-B**

**UNIT-IV**

- 7 Explain how current flows in a PN diode. With a neat sketch explain the VI characteristics of the diode?. CO5 L2 10M

**OR**

- 8 a With a neat sketch explain the operation of Half-wave rectifier. CO5 L2 5M  
b Derive an expression for ripple factor of a Half- wave rectifier with and without load. CO5 L3 5M

**UNIT-V**

- 9 Draw input and output characteristics CE configuration. Explain the Operation of CE transistor with necessary expressions? CO5 L2 10M

**OR**

- 10 Explain how a transistor acts as a switch for an input signal with necessary assumptions. CO5 L2 10M

**UNIT-VI**

- 11 With a neat sketch explain the working principle of JFET. Explain how the current flows in a JFET. CO6 L2 10M

**OR**

- 12 Draw and Explain the construction of n-channel Depletion mode MOSFET. Explain how current flows through the MOSFET. CO6 L2 10M

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