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

B.Tech II Year I Semester Supplementary Examinations August-2021

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to AGE, CSE & CSIT)

Time: **3 hours**Max. Marks: **60**

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

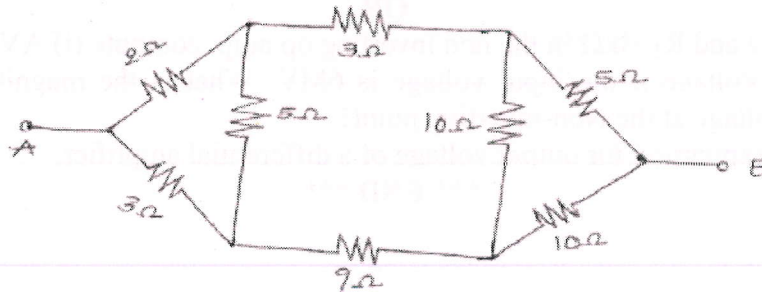
PART-A

UNIT-I

- 1 Three resistances of values 2Ω , 3Ω and 5Ω 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. **10M**

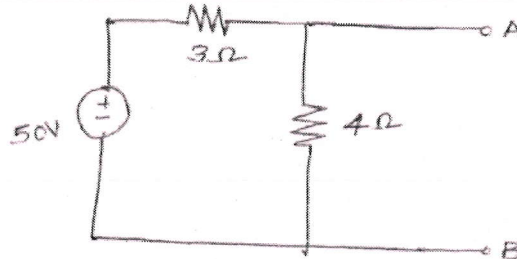
OR

- 2 Find the voltage to be applied across AB in order to drive a current of $5A$ into the circuit. **10M**



UNIT-II

- 3 a State Thevenin's theorem **3M**
b Find Thevenin's equivalent circuit across AB for the circuit shown in below. **7M**



OR

- 4 The given ABCD parameters are $A=2, B=0.9, C=1.2, D=0.5$ find Y- parameters. **10M**

UNIT-III

- 5 a Derive Torque equation of dc motor. **5M**
b The counter emf of shunt motor is 227 Volts. The Field Resistance is 160Ω and field current $1.5A$ if the line current is $36.5A$ find the armature resistance also find Armature current when the motor is stationary. **5M**

OR

- 6 a A Single phase $2200/250V$, $50Hz$ transformer has a net core area of $36cm^2$ and a maximum flux density of $6wb/m^2$. Calculate the number of turns of primary and secondary. **5M**
b Explain OC and SC test of a single phase transformer. **5M**

PART-B

UNIT-IV

- 7 Describe the working of a PN junction diode when it is connected in forward bias and reverse bias. Draw VI Characteristics of PN Junction Diode. 10M

OR

- 8 Discuss Zener Diode breakdown mechanism. Draw the Zener diode in its reverse bias and explain its Volt-Ampere characteristics. 10M

UNIT-V

- 9 a Discuss with neat diagrams, the Common Emitter Configuration and its characteristics. 5M
b Compare the characteristics of BJT CB, CE and CC transistor configurations. 5M

OR

- 10 a Explain the different configurations of JFET with neat diagrams. 5M
b Discuss the use of JFET as a switch. 5M

UNIT-VI

- 11 a Describe the working principle of Colpitts Oscillator with neat diagram. 5M
b Mention the types of RC oscillators. Explain RC phase shift oscillator with diagram. 5M

OR

- 12 a If $R_f = 45k\Omega$ and $R_2 = 3k\Omega$ in the non inverting op amp, compute (i) AVC and (ii) output Voltage if the input voltage is 6MV. What is the magnitude of the feedback voltage at the Non-inverting point? 5M
b Derive the expression for output voltage of a differential amplifier. 5M

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