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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B. TECH II Year I Semester Supplementary Examinations June 2019

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(AGE, CSE & CSIT)

Time: 3 hours

Max. Marks: 60

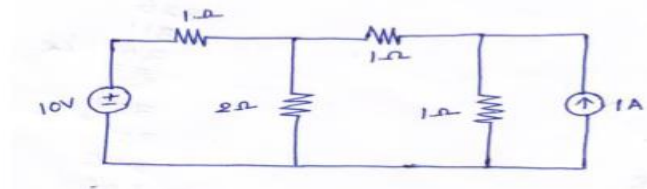
(Answer all Six Units 6 X 10 = 60 Marks)

PART- A**UNIT-I**

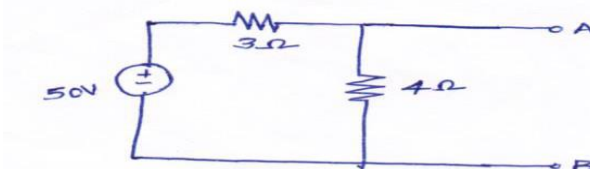
- 1 a Define and Explain about ohms law. 5M
b Explain about passive elements in detail. 5M
- OR**
- 2 Three resistances of values 2Ω , 3Ω and 5Ω are connected in series across 20V DC supply. 10M
Calculate i) Equivalent resistance of the circuit. ii) The total current of the circuit. iii) The voltage drop across each resistor. iv) The power dissipated in each resistor

UNIT-II

- 3 a State super position theorem. 2M
b Calculate the current in 2Ω resistor in the fig. using super position theorem. 8M

**OR**

- 4 a State Norton's theorem 5M
b Find Norton's equivalent circuit across AB for the circuit shown in below. 5M

**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 Derive EMF equation of a transformer. 5M
b A 100KVA, 11000V/400V, 50Hz transformer has 40 secondary turns. Calculate the number of primary turns and primary and secondary currents. 5M

P.T.O

PART – B**UNIT-I**

- 7 a What is Doping? Describe P-and N-type semiconductors. 5M
b Explain the behavior of PN junction diode. 5M

OR

- 8 a With neat diagram, explain the working principle of Half Wave Rectifier. Draw its input and Output waveforms 5M
b Derive the expression for Ripple factor and Efficiency of Half Wave Rectifier. 5M

UNIT-II

- 9 a Explain the functioning of Common Collector Configuration of BJT. State why this arrangement is also called an emitter follower circuit 5M
b Compare the characteristics of BJT CB, CE and CC transistor configurations 5M

OR

- 10 a Describe the constructional features of a Junction Field Effect Transistor. What is the Difference between a P type and N type JFET? Draw the cross-sectional view and show the Symbolic representation of each type of the transistor. 5M
b Explain in detail the theory of operation of n-channel JFET. 5M

UNIT-III

- 11 a With neat diagram, explain Summing Amplifier. 5M
b Derive the expression for output voltage of a differential amplifier 5M

OR

- 12 a In the inverting amplifier of op amp circuit, the input resistance is $R_i = 12k\Omega$ and the feedback resistance is $R_f = 300k\Omega$. Determine the closed loop gain (i) as a dimension-less unit and (ii) in dB. 5M
b In the summing amplifier circuit of op amp, the applied input voltage signals and their resistors are (i) 1mV with $0.5k\Omega$ {ii} 3mV with $1.5k\Omega$ and (iii) 5mV with $3k\Omega$. If $R_f = 12k\Omega$, calculate (i) individual closed loop gains and (ii) output voltage. What is the output voltage if the closed loop gain is unity? 5M

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