Q.P. Code: 19EE0240 **R19**

Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations December-2021
BASIC ELECTRICAL & ELECTRONICS ENGINEERING
(Mechanical Engineering)

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

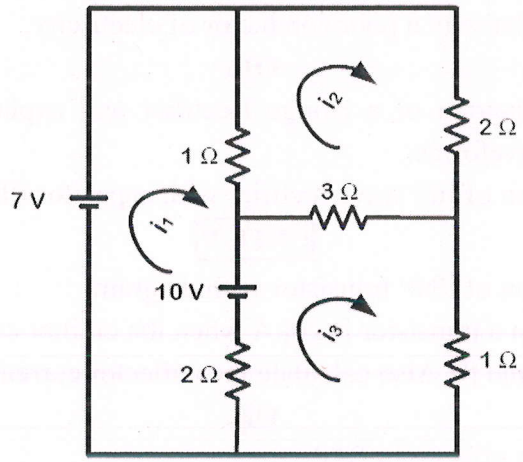
(Answer all Six Units **6 X 10 = 60** Marks)

PART-A

UNIT-I

1 **a** State and prove Kirchhoff's laws with suitable examples. **5M**

b Find *i1, i2, i3* for the given circuit by using Kirchhoff's laws? **5M**



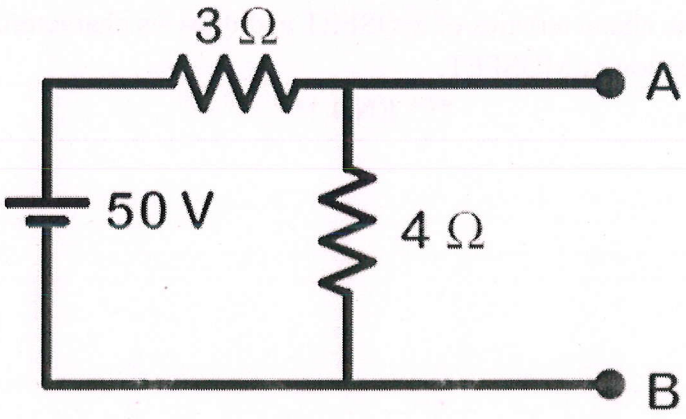
OR

2 Explain about the Star-Delta and Delta-Star transformation. **10M**

UNIT-II

3 **a** State Thevenin's theorem. **5M**

b Find the Thevenin's equivalent circuit across AB for the circuit shown. **5M**



OR

4 **a** Explain in detail about Impedance parameters. **5M**

b Briefly discuss about Admittance parameters. **5M**

UNIT-III

5	a	Discuss about the principle of operation of DC motors.	5M
	b	Calculate the value of torque established by the armature of a 4-pole DC motor having 774 conductors, 2 paths in parallel, 24mwb flux per pole when the total armature current is 50A.	5M

OR

6	a	Derive EMF equation of a transformer.	6M
	b	A 100 kVA, 11000/400 V, 50 Hz transformer has 40 secondary turns. Calculate the number of primary turns and primary and secondary currents.	4M

PART-B

UNIT-IV

7	a	Distinguish between conductors, semiconductors and insulators.	5M
	b	Draw the atomic structure of a semiconductor and explain why an intrinsic semiconductor is relatively a poor conductor of electricity.	5M

OR

8	a	Draw the circuit diagram of a Bridge Rectifier and explain its operation with input and output waveforms.	5M
	b	Discuss the operation of full wave rectifier with capacitor filter.	5M

UNIT-V

9	a	Discuss the operation of PNP transistor with diagram	5M
	b	If the base current in a transistor is 20μA when the emitter current is 6.4mA, what are the values of α and β? Also calculate the collector current.	5M

OR

10	a	Write notes on early effect of a BJT.	5M
	b	Describe the region of BJT when it's operating.	5M

UNIT-VI

11	a	Explain the output characteristics of JFET.	5M
	b	Explain the transfer characteristics of JFET.	5M

OR

12	a	Explain the static characteristics of MOSFET and draw its characteristics.	6M
	b	Write the application of MOSFET.	4M

*** END ***