Q.P. Code: 20EE0251 **R20**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech I Year I Semester Regular & Supplementary Examinations May-2022

BASIC ELECTRICAL & ELECTRONICS ENGINEERING

(Mechanical Engineering)

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

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

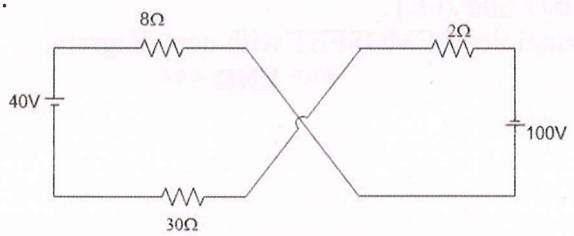
PART-A

UNIT-I

1	**a**	Write the derivation for equivalent resistance in series circuit.	**L3**	**5M**
	b	A 5 ohm, 10 ohm, 20 ohm, resistors are connected in series across 120V DC supply calculates Total Resistance, Total current, Voltage drop across each resistor.	**L4**	**5M**

OR

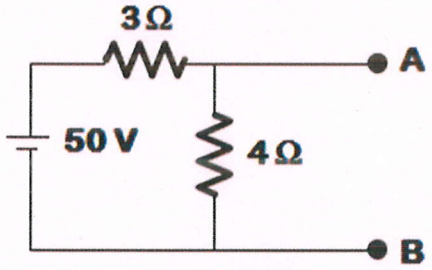
2		Find the voltage across 30 ohm resistor and current across 30 ohm resistor given circuit as shown below.	**L2**	**5M**



	b	Write the derivation of RMS Value of Alternating voltage	**L3**	**5M**

UNIT-II

3	**a**	State Thevenin's theorem	**L1**	**2M**
	b	Find the Thevenin's equivalent circuit across AB for the circuit shown.	**L3**	**8M**



OR

4		Write the constructional features of a DC machine with neat diagram.	**L3**	**10M**

UNIT-III

5	**a**	Discuss about the principle of operation of DC motors	**L5**	**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.	**L5**	**5M**

OR

6	**a**	Derive EMF equation of a transformer.	**L3**	**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.	**L4**	**4M**

PART-B

UNIT-IV

7	a	Distinguish between conductors, semiconductors and insulators.	L4	5M
	b	Discuss why an intrinsic semiconductor is relatively a poor conductor	L3	5M
		OR		
8	a	Explain the working principle of Bridge Wave Rectifier. Draw its input and output waveforms with neat circuit diagram.	L2	5M
	b	Explain the working principle of rectifiers with capacitor filter.	L2	5M

UNIT-V

9	a	Discuss the operation of PNP transistor with neat diagram.	L1	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.	L4	5M
		OR		
10		Explain the Fixed Bias of a BJT with a neat diagram.	L2	10M

UNIT-VI

11	a	With a neat diagram explain the Drain characteristics of N-channel JFET.	L2	5M
	b	Compare between CS, CG, CD configuration of JFET.	L4	5M
		OR		
12	a	Compare between BJT and JFET.	L4	5M
	b	Explain working principle of EMOSFET with neat diagram.	L2	5M

*** END ***