Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year I Semester Regular & Supplementary Examinations May-2022
BASIC ELECTRICAL & MECHANICAL ENGINEERING
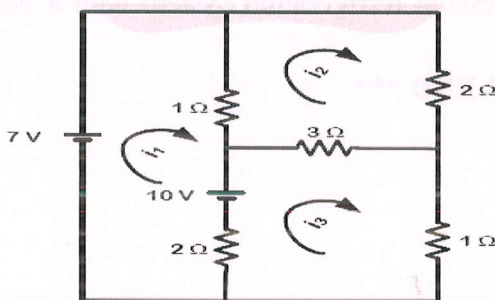(Common to CE & AGE)

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

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

PART-A
UNIT-I

1	**a**	State and prove Kirchhoff's laws with suitable examples.	L2	5M
	b	Find *i1, i2, i3* for the given circuit by using Kirchhoff's laws?	L4	5M

OR

2	Explain in detail about		L2	10M
	(i) RMS value, (ii) Average value, (iii) Form factor, (iv) Peak factor			
	(v) Prove that the form factor of the sinusoidal wave is 1.11.			

UNIT-II

3	State and prove Reciprocity theorem with suitable example.		L1	10M

OR

4	**a**	The given ABCD parameters are A=2, B=0.9, C=1.2, D=0.5. Find Y-parameters.	L3	5M
	b	The given Y-parameters are Y11=0.5, Y12=Y21=0.6, Y22=0.9. Find the Impedance parameters.	L3	5M

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 the condition for maximum efficiency of the transformer.	L3	5M
	b	Discuss about the voltage regulation of the transformer.	L3	5M

PART-B

UNIT-I

7	a	Define casting and classify the types of castings.	L1	5M
	b	Illustrate the process of Investment casting with a sketch.	L2	5M

OR

| 8 | Elaborate the working of Gas welding with a neat sketch. Also mention its advantages and limitations. | L6 | 10M |

UNIT-II

| 9 | Draw the diagram of the Lathe and explain its parts. | L2 | 10M |

OR

| 10 | Elaborate the working procedure of Milling machine with a neat sketch. | L6 | 10M |

UNIT-III

| 11 | Explain front wheel drive and rear wheel drive system with simple sketches. | L5 | 10M |

OR

| 12 | Explain the working of vapour compression refrigeration system with a neat sketch. | L2 | 10M |

*** END ***