

Sri Siddhartha Institute of Technology, Tumakuru

(A Constituent College of Sri Siddhartha Academy of Higher Education, Accredited by NAAC with 'A' grade)
ES EEI - 102: BASIC ELECTRICAL ENGINEERING

TEST I

Max. Marks: 30

Answer all the questions:

Date: 09.02.2021

Sl.	Question	Mapping			Marks
		CO	PO	BTL	
1	Sketch the sinusoidal alternating current waveform and define the following terms; i. Instantaneous value iv. Frequency	1	1,2	1,2	05
2	Demonstrate that the average power in pure inductor is zero	1	2	2,3	05
3	With the help of circuit diagram and phasor diagram, discuss the behavior of R-C series circuit.	1	5	2,3	05
4	Two impedance $Z_1 = (10 + j15) \Omega$ and $Z_2 = (5 - j8) \Omega$ are connected in parallel across a voltage source. If the total current drawn is 10 A, evaluate the currents in Z_1 and Z_2 and power factor of the circuit.	2	3,5	1,3	05
5	Derive the relationship between line and phase values of voltage in a three phase balanced Star connected system.	2	5	2,4	05
6	A three phase 415 V supply is given to balanced load which is delta connected. Impedance in each phase is $(8 + j6) \Omega$. Evaluate the phase current and the total power consumed.	2	3,5	2,4	05

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Department of Electrical and Electronics Engineering
Program: Bachelor of Engineering (B.E.)
ES EEI - 102: BASIC ELECTRICAL ENGINEERING

Internal Assessment # 02
Answer the following questions

Max. Marks: 30

Date: 05.03.2021

Sl.	Question	Mapping			Marks
		CO	PO	BTL	
1	Examine whether in a three phase balanced star connected circuit; two Wattmeters are sufficient to measure three phase power. Also formulate the expression for power factor.	2	1,2	1,2	07
2	With the help of a neat sketch, explain plate earthing.	2	2	2,3	06
3	With the help of circuit diagram, explain three way control of lamp	2	5	2,3	06
4	Develop the e.m.f equation of a transformer.	3	3,5	1,3	06
5	The primary winding of a transformer is connected to a 240 V, 50 Hz supply. The secondary winding has 1500 turns. If the maximum value of flux in the core is 0.00207 Wb, evaluate (i) secondary induced e.m.f (ii) number of turns in the primary (iii) cross section area of the core if the flux density has a maximum value of 0.465 Tesla	3	5	2,4	05

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ES EEI-102: Basic Electrical Engineering

Date: 30/03/2021

TEST III

Time: 1.00Hr

Answer all the questions

- | | M | C | B |
|---|---|---|-----|
| 1 With a neat sketch explain the construction of a D.C. machine. | 5 | 4 | 1,2 |
| 2 With usual notations develop the e.m.f equation of a D.C. generator. | 5 | 4 | 2,3 |
| 3 Explain the working principle of D.C motor. | 5 | 4 | 2,3 |
| 4 A 4 pole D.C shunt motor takes 22 A from 220 V supply. The armature and field resistances are 0.5Ω and 100Ω respectively. The armature is lap connected with 300 conductors. If the flux per pole is 20 mWb. Evaluate the speed and gross torque. | 5 | 4 | 1,3 |

NOTE: M is marks, C is CO and B is Blooms level

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ES EEI - 202: BASIC ELECTRICAL ENGINEERING

Internal Assessment # 03

Max. Marks: 20

Date: 12.08.2021

Answer the following questions

Sl.	Question	Mapping			Mark
		CO	PO	BTL	
1	With usual notations develop the e.m.f equation of a DC generator.	3	1,2	1,2	
2	A 4 pole, 1500 r.p.m DC generator has a lap wound armature having 24 slots with 10 conductors per slot. If the flux per pole is 0.04 Wb, evaluate the e.m.f generated in the armature. Evaluate the generated e.m.f if the winding is wave connected.	3	2	2,4	
3	Develop an expression for armature torque of a DC motor.	3	5	2,3	
4	A 4 pole DC shunt motor takes 22 A from 220 V supply. The armature and field resistances are 0.5Ω and 100Ω respectively. The armature is lap connected with 300 conductors. If the flux per pole is 20 mWb. Evaluate the speed and gross torque.	3	3,5	2,4	