



**ACE**  
Engineering College  
(with a Difference in Excellence)

An AUTONOMOUS Institution

Question Paper Code:

EE103ES

ACE-R20

**Semester End Examination**  
**I B. Tech- I Semester Regular/ Supply -JUNE-2022**  
**Basic Electrical Engineering**  
**(Common to EEE, CSE, IT,CSD )**

Time: 3 Hours

Max. Marks: 70

H. T. No

Answer any 5 Questions out of 8 Questions from the following

Q.No	Question	Marks
1. a)	Obtain the expressions for star-delta and delta-star equivalence of resistive network	7
b)	What are active and passive elements? Explain in detail.	7
2. a)	A coil takes a current of 1 A at 0.6 lagging power factor from a 220 V, 60 Hz single-phase source. If the coil is modeled by a series RL circuit, find, (i) The complex power in the coil and (ii) The values of R and L.	8
b)	What is series resonance? Derive the expression for resonant frequency?	6
3.	Explain in detail about construction and working principle of a Single-phase transformer.	14
4. a)	What are the losses present in the transformer and how these can be reduced?	8
b)	Find the equivalent resistance $R_{ab}$ between terminals a and b	6
5. a)	Analyze the RL and RC circuits with AC input and find the current equations. Draw the phasor diagrams	6
b)	A series R L C Circuit with $R=10\Omega$ , $L=10\text{mH}$ and $C=100\mu\text{F}$ is excited by a single phase 230V, 50Hz supply. Determine the total current, voltages across R,L and C elements	8

6. a)	Explain how the speed of a Separately Excited DC motor can be controlled	7
b)	Explain the construction of the DC Generator with a neat sketch.	7
7. a)	What are the types of batteries and explain about important characteristics of batteries?	6
b)	Explain about the following i) MCB      ii) MCCB      iii) Earthing      iv) Types of batteries	8
8. a)	Explain the construction and working principle of a single-phase induction motor.	7
b)	Explain the construction of synchronous generator.	7