



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- JULY- 2021
BASIC ELECTRICAL ENGINEERING
(common to EEE, CSE, IT,CSD)

Time: 3 Hours

Max. Marks: 70

H. T. No

Answer any five full questions from the following. All Questions carry equal marks.

M=Marks; CO=Course Outcomes; PO= Program Outcomes

Q.No	Question	M	CO	PO
1. a)	State and explain Kirchoff's Laws.	7	1	1,2
b)	Three resistances of 5 Ohms, 10 Ohms and 15 Ohms are connected in parallel. If the current in 10 Ohms is 3 A, What is the current in other resistors and total current? Also determine the voltage applied to the circuit.	7	1	1,4
2. a)	State and Explain Superposition theorem.	7	1	2
b)	Write short notes on Star-Delta transformation. If R_{ab} , R_{bc} , R_{ca} are connected in delta, derive the expressions for equivalent star connection.	7	1	1,2
3. a)	Show that power dissipated by a pure Capacitor excited by a sinusoidal voltage source $V = V_m \sin \omega t$ is Zero.	7	2	1,2
b)	A coil is having a resistance of 10 Ohms and an Inductance of 20 mH is connected in series with $50 \mu F$ across a 220 V and 50 Hz supply. Determine active, reactive components of the current, Voltage across the coil and draw the phasor diagram.	7	2	1,4
4. a)	Derive the expression for resonant frequency of RLC series circuit.	7	2	1,4
b)	A resistance of 20 Ohms, Inductance of 0.2 H and Capacitance of $150 \mu F$ are connected in series and are fed by a 230 V, 50 Hz supply. Find X_L , X_C , Z , Y , Power factor.	7	2	1,4
5. a)	Explain the operation of single phase transformer at no-load with the help of phasor diagram.	7	3	1,2
b)	A 300 V/ 50 V single phase transformer takes a full load current of 3 A. Neglecting losses, determine the full load secondary current and the rating of the transformer.	7	3	1,4
6. a)	Write down the similarities and dissimilarities between motors and generators.	7	4	1,2
b)	A 200 V DC shunt motor takes a total current of 100 A and runs at 750 rpm. The armature resistance and shunt field winding resistance is 0.1 Ohms and 50 Ohms respectively. Determine total copper losses.	7	4	1,4

7. a)	Explain the principle of operation of a three phase induction motor.	7	4	1,2
b)	Give the constructional features of a synchronous Generator.	7	4	1,3
8. a)	Explain different types of wires and cables.	7	5	1,3
b)	Compare Between Primary and Secondary Batteries.	7	5	1,3

