

Model Question Paper- I with effect from 2022

CBCS SCHEME

First Semester B.E Degree Examination _____

Elements of Electrical Engineering (BEEE103)

TIME: 03Hours

Max.Marks:100

Note:

1. Answer any FIVE full questions, choosing ONE question from each MODULE
2. VTU Formula Hand Book is Permitted
3. M- Marks, L- Blooms Level, C –Course Outcome

		Module - 1	M	L	C
Q.1	a	State and explain Ohms law and what are its limitations	8	L2	CO1
	b	A resistor R is connected in series with a parallel circuit consisting of two resistors of 12 ohm and 8 ohm. Total power dissipated in the circuit is 70 Watts, applied voltage is 20 V, find the value or R	6	L3	CO3
	c	Derive an expression for energy stored in inductor	6	L3	CO1
OR					
Q.2	a	State and explain Kirchhoff's laws	8	L2	CO1
	b	A coil of 1000 turns is wound on a ring of silicon steel, having a mean diameter of 10 Cm and relative permeability of 1200. Its cross sectional area is 12 Sq.Cm. When a current of 5A flows through the coil, find flux in the core, the inductance of the coil and the induced emf, if the flux falls to zero in 20 mS	6	L3	CO3
	c	State and explain Lenz's law	6	L2	CO1
Module – 2					
Q.3	a	Show that the power consumed in a pure capacitive circuit is zero with the help of voltage, current and power waveforms	8	L3	CO2
	b	Define average and RMS values of sinusoidal voltage. Also derive the respective expressions	6	L2	CO2
	c	A resistance of 50 ohm and capacitor of 500 microfarad capacitance form a series circuit. If an alternating voltage of 100 V at 50 Hz frequency is applied across it. Find the current, power, power factor and draw the phasor diagram	6	L3	CO2
OR					

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Q.4	a	Show that voltage and current in pure resistive circuit is in phase with each other. Also derive the equation for power consumed.	8	L3	CO2
	b	A coil of resistance 10 Ohm and inductance of 0.1 Henry is connected in series with condenser of capacitance of 150 micro Farad across 200 V, 50 Hz, AC supply. Find current, power, power factor, voltage drop across coil, voltage drop across condenser and draw the phasor diagram	6	L3	CO2
	c	Define power factor. Draw the vector diagram showing the power factor angle for different loading conditions	6	L2	CO2
Module – 3					
Q5	a	List the advantages of 3 phase AC system	6	L2	CO2
	b	With a circuit and phasor diagram, Show that two wattmeters are sufficient to measure 3 phase power	8	L3	CO2
	c	A delta connected load consists of a resistance of 10 Ohm and capacitance of 100 micro Farad in each phase. A supply of 410 V at 50 Hz is applied to the load. Find the line current, power factor and power consumed by the load	6	L3	CO2
OR					
Q.6	a	In a three phase star connection, find the relation between line and phase values of current and voltages. Also derive the equation for three phase power	8	L3	CO2
	b	Two wattmeters are connected to measure the power in a 3 phase circuit read 5 kW and 1 kW, the latter being read after reversing the potential coil ends. Calculate the power, power factor, total volt-ampere and reactive volt-amperes.	6	L3	CO2
	c	Explain the effect of power factor on two wattmeter readings connected to measure 3 phase power	6	L2	CO2
Module – 4					
Q.7	a	With a neat wiring diagram and truth table explain two way control of lamp	8	L2	CO5
	b	With a neat diagram explain working of a Megger	6	L2	CO4
	c	List the advantages and disadvantages of wooden casing and capping wiring	6	L2	CO5
OR					
Q.8	a	With a neat wiring diagram and truth table explain three way control of lamp	8	L2	CO5
	b	With a neat diagram explain working principle of wheatstones bridge	6	L2	CO4

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	c	With a neat diagram explain the principle of Kelvins double bridge	6	L2	CO4
Module – 5					
Q.9	a	What is earthing and with a neat diagram explain pipe Earthing	8	L2	CO5
	b	What is tariff and explain two part tariff.	6	L2	CO5
	c	Write short notes on miniature circuit breaker	6	L2	CO5
OR					
Q.10	a	With a neat circuit diagram explain the operation of RCCB.	6	L2	CO5
	b	What is earthing and with a neat diagram explain plate earthing	8	L2	CO5
	c	Write a short note on precautions against electric shock.	6	L2	CO5