Model Question Paper-I

CBCS SCHEME

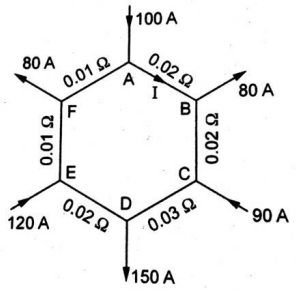
First/Second Semester B.E Degree Examination,

Basic Electrical Engineering (BEE105)

TIME: 03Hours **Max. Marks: 100**

Notes:

1. *Answer any FIVE full questions, choosing at least ONE question from each MODULE*
2. *VTU Formula Hand Book is Permitted*
3. *M: Marks, L: Bloom's level, C: Course outcomes.*

		Module-1	M	L	C
Q1	a	State and explain Ohms law with its limitations.	8	L2	CO1
	b	Find the current in various branches for the given network shown. 	8	L3	CO1
	c	Define absolute and relative permittivity.	4	L1	CO1
		OR			
Q2	a	Brief about i) Magnetic flux ii)Magnetic flux density iii)Magneto Motive force	6	L2	CO1
	b	An 8-ohm resistor is in series with the parallel combinations of two resistors 12 ohm and 6 ohms. If the current in the 6 ohm resistor is 5A. Determine the total power dissipated in the circuit	6	L3	CO1
	c	State and explain Kirchhoff's laws.	8	L2	CO1
		Module-2			
Q3	a	State and explain Faraday's law of electromagnetic induction.	8	L3	CO2
	b	Two coils having 150 and 200 turns are wound on a closed magnetic core of cross section $1.5*10^{2}m^{2}$ and mean length 3m. The relative permeability in 2000. Calculate i) Mutual inductance between the coils ii) Voltage induced in the second coil if the current changes from 0 to 10A in the first coil in 20ms.	6	L3	CO2
	c	State Flemings right hand rule and left hand rule.	6	L2	CO2
		OR			
Q4	a	Define the coefficient of coupling and find its relation with L1,L2 and M.	6	L2	CO2
	b	A coil consists of 750 turns. A current of 10 A in the coil gives rise to a magnetic flux of 1200 μWb. Determine (i) the inductance of the coil, and (ii) the average emf induced in the coil when this current is reversed in 0.1 s.	6	L3	CO2
	c	Explain statically induced emf and dynamically induced emf.	8	L2	CO2

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		Module-3			
Q5	a	Define average and RMS values of sinusoidal voltage. Also derive the respective expressions	6	L2	CO3
	b	A Series circuit with the resistor of 100 Ohm, Capacitor of 25μF and inductance of 0.15H is connected across 220V,50Hz Supply. Calculate impedance, Current, Power and Power Factor of the circuit.	6	L3	CO3
	c	Show that voltage and current in pure resistive circuit is in phase with each other.Also derive the equation for power consumed.	8	L3	CO3
		OR			
Q6	a	Sketch the sinusoidal alternating current waveform and define the following terms. a) Time period b) Amplitude c) Frequency d) Waveform e) Cycle	6	L2	CO3
	b	Two impedance Z1=(10+j15) Ω and Z2 =(6-j8) Ω are connected in parallel . If the total current is 15A, what is power taken by each branch?	6	L3	CO3
	c	Derive the expression for Power consumed by R-L Circuit. Draw the waveform for voltage, current and power.	8	L3	CO3
		Module-4			
Q7	a	What are the advantages of three phase system over single phase system. Explain.	6	L2	CO4
	b	A balanced star connected load of (8+j6) ohms per phase is connected to 3phase 230V supply. Find the line current, power factor, power reactive volt ampere and total volt ampere.	6	L3	CO4
	c	i) Deduce the relationship between the phase and line voltage, line current and power in three phase delta connected system.	8	L2	CO4
		OR			
Q8	a	With the neat circuit diagram and Phasor diagram, show that two watt-meters are sufficient to measure three phase power.	8	L3	CO4
	b	A 3 phase, 400V, motor takes an input of 40 KW at 0.45pf lag. Find the reading of each of the two single phase watt-meter connected to measure the input.	6	L3	CO4
	c	Deduce the relationship between the phase and line voltage, line current and power in three phase star connected system.	8	L3	CO4
		Module-5			
Q9	a	Write a short note on precautions against electric shock.	6	L2	CO5
	b	Write a short note on Fuse and MCB.	8	L2	CO5
	c	What are the desirable characteristics of tariff and explain two part tariff.	6	L2	CO5
		OR			
Q10	a	Define Earthing, with the neat diagram explain plate earthing.	6	L2	CO5
	b	List out the power rating of house hold appliances including air conditioner, PC's, laptop and printers. Find total power consumed.	8	L2	CO5
	c	With a neat wiring diagram and truth table explain three way control of lamp	6	L2	CO5