PRN No.	Total No. of
RBT24CE018	Questions:

FYMSEEC132411B

JSPM's

Rajarshi Shahu College of Engineering, Tathawade, Pune- 411033

(An Empowered Autonomous Institute Affiliated to Savitribai Phule Pune University)

Examination: Mid Semester Examination (MSE)

Semester: I   Academic Year: 2024-25

Programmes: Electronics and Telecommunication Engineering, Electrical

Engineering, Civil Engineering, Information Technology and Computer

Science and Business Systems

Examination Class: F. Y. B. Tech.

Course Code: EE1201T   Course Name and Pattern: Introduction to Electrical

Engineering

Duration: 1.15 Hour

Max. Marks: 30 Marks

1. Solve section All three sections A, B, C
2. Choose and answer **one** option from each question.
3. Assume suitable and necessary data wherever required.
4. Use of log table, scientific calculator, steam table is allowed.

Section A

Q. No.		Question	Bloom's Level	Marks	COs
1	a.	Define magnetic flux density with its formula and unit.	BL 1	02	CO1
	b.	List the types of induced EMF's in electrical circuit with their formulas.	BL 1	02	CO1
		OR			
1	a.	Define Relative permeability with its formula and unit.	BL 1	02	CO1
	b.	State Faraday's laws of Electromagnetic Induction.	BL 1	02	CO1
2	a.	What are the types of transformer based on number of phases and level of voltages?	BL 1	02	CO1
	b.	Define time period and frequency with its unit.	BL 1	02	CO1
		OR			
2	a.	What are the main two parts of transformer? Name the material used for the same.	BL 1	02	CO1
	b.	List the different type of powers in single phase AC circuits with their formula and unit.	BL 1	02	CO1
3		Show the ac voltage and current waveforms for purely resistive load and comment on it.	BL 1	02	CO1
		OR			
3		Name the types of reactances with their formula and unit.	BL 1	02	CO1

Section B

Q. No.		Question	Bloom's Level	Marks	COs
4	a.	Classify the different types of losses in detail with their formulae.	BL 2	03	CO2
	b.	Explain the operation of ac circuit with purely capacitive load in terms of circuit diagram, voltage and current equation.	BL 2	03	CO2
		OR			
4	a.	Derive the expression for resonant frequency with usual notation.	BL 2	03	CO2
	b.	Compare electric circuit with magnetic circuit in terms of similarities and dissimilarities.	BL 2	03	CO2
5	a.	For pure sinusoidal waveform show that $V_{avg} = \frac{2V_m}{\pi}$.	BL 2	03	CO2
	b.	Explain the concept of admittance with its components.	BL 2	03	CO2
		OR			
5	a.	Explain the concept of capacitive reactance in terms of definition, circuit diagram, formula and unit.	BL 2	03	CO2
	b.	Show well labeled circuit for star connected balanced resistive load.	BL 2	03	CO2

Section C

Q. No.		Question	Bloom's Level	Marks	COs
6	a.	Show the expression of current flowing in a pure resistor of 40 Ω connected across 230V, 50Hz, AC supply with the phasor diagram.	BL 3	04	CO3
	b.	A 5 kVA,5000/1000V, 50Hz, single phase transformer has iron loss of 150 watt and full load copper loss of 180 watt. Estimate efficiency of the transformer at: i. Half load and 0.85 p.f lagging ii. 75 % of the full load and 0.8 power factor leading	BL 3	04	CO3
		OR			
6	a.	An electric conductor of effective length 5 m is moving with velocity 50 m/s in a magnetic field having density 1.5 T. Estimate EMF induced in a conductor if conductor is moving in a direction (a) 45^0 (b) 90^0 with respect to magnetic field.	BL 3	04	CO3
	b.	An alternating current is given by i(t) = 12 sin 314t. Compute RMS and average value, frequency, time period of current.	BL 3	04	CO3