

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)*

UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL/MAY 2026

*Second Semester**Artificial Intelligence and Data Science*

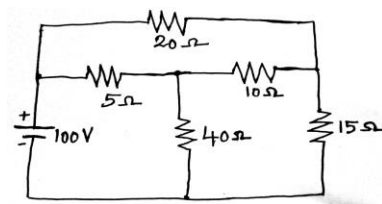
BE3251 / UBET24202 - BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

*(Common to Mechanical Engineering, Biomedical Engineering & Information Technology)**Regulations – 2021 & 2024**Duration : 3 Hrs**Maximum : 100 Marks***PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

Q.No	Questions	BLT	CO	Marks
1.	State Kirchhoff's current law.	L1	1	2
2.	Define the power factor of an AC circuit.	L2	1	2
3.	State the principle of DC generator.	L2	2	2
4.	List the applications of three phase induction motor.	L1	2	2
5.	Name the semiconductor materials.	L1	3	2
6.	State the merits of MOSFET.	L1	3	2
7.	Convert $B3_{16}$ into binary number.	L3	4	2
8.	State the two forms of Karnaugh Map.	L2	4	2
9.	What is meant by calibration?	L2	5	2
10.	Mention the instrument transformers.	L1	5	2

PART - B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11.	a i Calculate the current passing through 20Ω resistor in the following circuit using mesh current analysis	L3	1	10



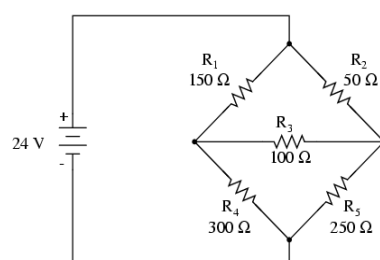
ii Derive the average value of sinusoidal voltage

L2 1 6

Or

b i Find the current through 100Ω resistor using Mesh current method.

L3 1 10



ii Define real power, reactive power and apparent power.

L2 1 6

12.	a	i	Illustrate the construction of DC Machine.	L3	2	10
		ii	Derive the EMF equation of DC generator.	L3	2	6
Or						
	b		Classify three phase induction motor and explain the constructional details.	L3	2	16
13.	a		Compare the structure, characteristics and applications of PN junction diode and Zener diode.	L2	3	16
	Or					
	b		Draw the circuit of single- phase inverter and explain its operation.	L2	3	16
14.	a		Implement logic using gates for the following Boolean function: $F(X, Y, Z) = X + \overline{Y}Z$ Draw the truth table for the logic.	L3	4	16
	Or					
	b		Simplify the Boolean function using a 3-variable K-Map: $f(A, B, C) = \Sigma(0,1,3, 7)$. Implement it using basic gates.	L3	4	16
15.	a	i	Explain the principle and operation of moving coil ammeter.	L2	5	10
		ii	Draw the block diagram of DSO.	L2	5	6
	Or					
	b	i	Describe about the principle and operation of energy meter.	L2	5	10
		ii	Draw the block diagram of data acquisition system.	L2	5	6
