

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Second Semester

Mechanical Engineering

BE3251 - Basic Electrical and Electronics Engineering
(Common to Artificial intelligence and Data Science, Computer Science and Engineering,
Information Technology & Biomedical Engineering)
Regulations - 2021

Duration : 3 Hrs

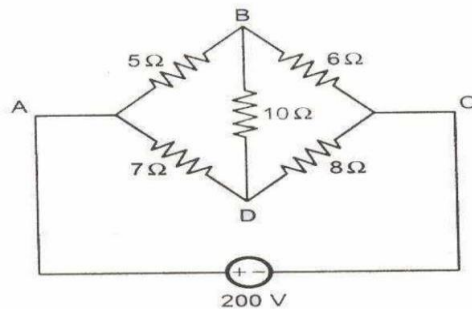
Maximum : 100 Marks

PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	Questions	BLT	CO	Marks
1.	Illustrate Ohm's Law.	UN	1	2
2.	Define RMS value.	RE	1	2
3.	Explain the principle of DC Motor.	UN	2	2
4.	Mention the applications of DC Generator.	UN	2	2
5.	Draw the V-I characteristics of PN-Junction diode.	UN	3	2
6.	What is Zener diode? List its applications.	UN	3	2
7.	Give the truth table of XOR gate.	UN	4	2
8.	Prove that $A + A'B = A+B$.	AP	4	2
9.	Give the classifications of measuring instruments.	RE	5	2
10.	Point out the torques required for the operation of an indicating instruments.	UN	5	2

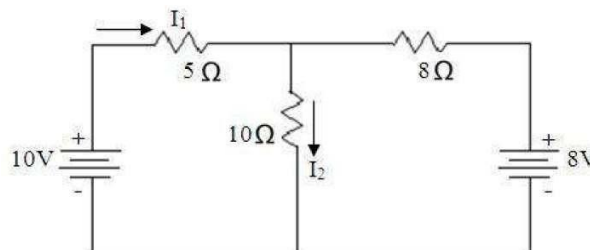
PART - B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)

Q.No	Questions	BLT	CO	Marks
11. a	Find the current through 10-ohm resistance using mesh current analysis.	AN	1	13



Or

- b i Figure shows a two D.C source network, the branch current I_1 and I_2 are marked in it. By using Kirchhoff's law, calculate and examine the current I_1 .



	ii	A series circuit has $R=10\Omega$, $L=50\text{mH}$ and $C=100\mu\text{F}$ and is applied with 200V, 50 Hz. Find and examine the value of: (1) Impedance (2) Current (3) Power (4) Power factor (5) Phase angle (6) Voltage drop across each element.	AN	2	6
12.	a i	With a neat diagram explain the construction and working of D.C. Generator.	AP	2	8
	ii	Derive the EMF equation of DC Generator. Or	AP	2	5
	b	Explain the construction and working of three phase induction motor.	AP	2	13
13.	a	Explain the performance of the transistor in three different types of configurations. Or	AP	3	13
	b	Explain the term Bridge rectifier with suitable circuit diagram and formulate its efficiency, ripple factor, TUF and PIV.	AP	3	13
14.	a	Show how a full adder can be implemented using NAND gate. Or	AP	4	13
	b	Explain the working of JK and D flip flops.	AP	4	13
15.	a	Explain about the DSO with relevant diagrams. Also mention its salient features. Or	EV	5	13
	b	Discuss the constructional details of P.T and explain about the error in potential transformer.	EV	5	13

*PART - C (Marks 1*15 = 15)*

<i>Q.No</i>		<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
16.	a	Draw the different characteristics of DC motor and explain them in detail. Or	AN	2	15
	b	Explain the working principle of transformer and also derive the EMF equation of single-phase transformer.	AN	2	15