

Reg. No.

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B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2023

Second Semester

EE22151– BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to all branches except CHE, EEE, ECE)

(Regulation 2022)

TIME: 3 HOURS

MAX. MARKS: 100

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Compute the electric circuit parameters for simple problems	2
CO 2	Understand the construction and characteristics of different electrical machines.	1
CO 3	Describe the fundamental behavior of different semiconductor devices and circuits.	2
CO 4	Design basic digital circuits using Logic Gates and Flip-Flops.	3
CO 5	Analyze the operating principle and working of measuring instruments.	3

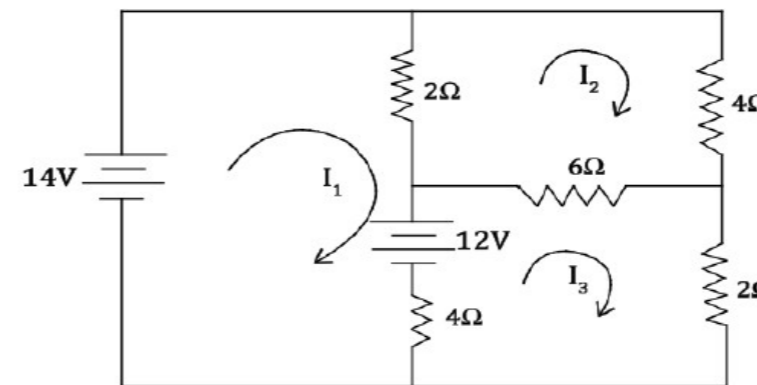
PART- A (20 x 2 = 40 Marks)
(Answer all Questions)

Q. No.	QUESTION	CO	RBT LEVEL
1.	Two resistances with values 6Ω and 3Ω are connected in parallel. The combination is in series with 8Ω . Find the equivalent resistance.	1	3
2.	A sinusoidal current wave is given by $i = 50 \sin(100\pi t)$. Determine the root mean square value.	1	2
3.	What do you understand by balanced system?	1	2
4.	Summarize the advantages of 3 phase circuits over single phase circuits.	1	2
5.	What are the materials used for brushes in dc machines?	2	2
6.	State the types of transformers.	2	2
7.	List few applications of a transformer.	2	2
8.	Give reason why single phase induction motors are not self-starting?	2	3
9.	Draw the structure with symbolic representation of NPN and PNP Transistor.	3	2
10.	List out the common diode applications.	3	2
11.	Differentiate between PN junction diode and zener diode.	3	3
12.	State the advantages of bridge rectifier.	3	2
13.	Construct T Flip-Flop using JK flip-flop.	4	3
14.	State the types of shift registers.	4	2

15.	Convert $(0.513)_{10}$ to octal.	4	3
16.	List the problems associated with the asynchronous counter.	4	2
17.	Classify instruments based on their functions.	5	3
18.	State the advantages of PMMC instruments.	5	2
19.	Point out the torques required for the operation of an indicating instruments.	5	2
20.	Why aluminum disc is used in induction type energy meter?	5	2

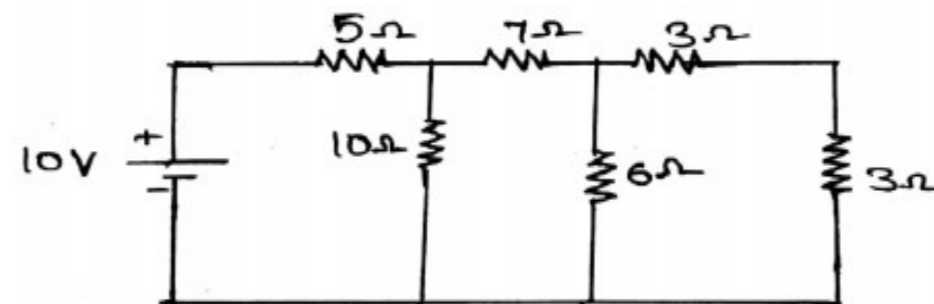
PART- B (5 x 10 = 50 Marks)

21. (a) Find the Loop currents I_1, I_2 and I_3 of the given circuit using mesh current method. Marks (10) CO 1 RBT LEVEL 3



(OR)

(b) Find the node voltages using nodal analysis (10) 1 3



22. (a) Discuss the principle and construction of D.C. Machine with neat diagram. (10) 2 3

(OR)

(b) Examine the working principle and construction of single -phase transformer with neat diagram. (10) 2 3

23. (a) Explain the V - I characteristics of PN Junction diode with neat diagrams. What is Static and Dynamic Resistance? (10) 3 3

(OR)

(b) Illustrate the input and output characteristics of BJT in Common Emitter configuration. (10) 3 3

24. (a) Obtain the expression for SUM and CARRY outputs of a full adder using k-map, and implement the same. (10) 4 4

(OR)

(b) Construct a 4 bit Asynchronous counter. (10) 4 4

25. (a) Illustrate with suitable diagram the construction and working of moving coil type measuring instruments. (10) 5 2

(OR)

(b) Describe the construction of dynamo meter wattmeter in detail (10) 5 2

PART- C (1 x 10 = 10 Marks)

(Q.No.26 is compulsory)

	Marks	CO	RBT LEVEL
26. A coil of resistor of 4Ω and inductance of 3 mH and C of 800 mF are connected in series and applied across 200 V, 50 Hz supply. Determine the following (i) Impedance (ii) current flowing through the circuit (iii) power factor (iv) phasor diagram (v) active power	(10)	1	4
