Q. Code:176617

Reg. No. | | | | | | | | | | | | | |

B.E./ B.TECH. DEGREE EXAMINATIONS, MAY 2024

First Semester

EE22151– BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to all branches except CH, EE, EC)

(Regulation2022)

TIME:3 HOURS **MAX. MARKS: 100**

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

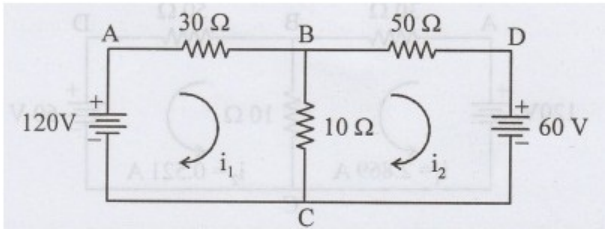
PART- A(20X2=40Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Two resistors of 5 Ω and 9 Ω are connected in parallel and a voltage of 200 V is applied to the terminals .Find the total current taken by the circuit.	**1**	**3**
2.	In a closed loop of resistors the algebraic sum of the electro motive forces is 10 V. What is the voltage drop across the resistors in that loop? Assume R=10 Ω, I=1A.	**1**	**4**
3.	For the pure resistive circuit excited by sinusoidal varying voltage, what are the phase angle and power factor?	**1**	**4**
4.	State the relation between line & phase quantities of a balanced 3 phase star connected system.	**1**	**3**
5.	What is the purpose of yoke in a DC machine?	**2**	**3**
6.	What is the significance of back EMF in DC motor?	**2**	**3**
7.	State the applications of a DC motor.	**2**	**2**
8.	In a single phase transformer, Np = 350 turns, Ns = 1050 turns, Ep = 400V. Find Es.	**2**	**3**
9.	Write the difference between PN junction diode and Zener diode.	**3**	**3**
10.	List the advantages of bridge rectifier.	**3**	**2**
11.	Draw the energy band structure of a semiconductor.	**3**	**2**
12.	Why Common Emitter configuration is used in amplifier circuits?	**3**	**4**
13.	Define half adder.	**4**	**2**
14.	Tell the basic applications of flip flop.	**4**	**2**
15.	Name the problem associated with the asynchronous counter.	**4**	**4**
16.	List out the classification of sequential circuits.	**4**	**2**
17.	What are absolute instruments?	**5**	**2**
18.	What is the purpose of registering mechanism?.	**5**	**3**
19.	Name the types of instruments used for making voltmeter and ammeter..	**5**	**3**
20.	Write down the deflecting torque equation in dynamometer type wattmeter.	**5**	**3**

PART- B (5x 10=50Marks)

		Marks	CO	RBT LEVEL
21.(a)	Determine mesh current I_1, I_2 shown in the figure	**(10)**	**1**	**3**



(OR)

(b)	A coil of resistance 10 Ω and inductance 0.1 H is connected in series with a 150 μF capacitor across 200V, 50 Hz supply. Calculate (i) Inductive reactance, Capacitance reactance, impedance, current and power factor.	**(10)**	**1**	**3**
22.(a)	Explain the principle and construction of D.C. generator with neat diagram.	**(10)**	**2**	**3**
	(OR)			
(b)	Discuss the working of single phase transformer and derive the emf equation of transformer.	**(10)**	**2**	**3**
23.(a)	Describe the operation of PN junction diode and its characteristics with suitable diagram.	**(10)**	**3**	**3**
	(OR)			
(b)	Illustrate the input and output characteristics of common emitter .bipolar junction transistor	**(10)**	**3**	**3**
24.(a)	Draw and explain the operation of SR flip-flop with logic diagram.	**(10)**	**4**	**3**
	(OR)			
(b)	With necessary diagram describe the operation of 4 bit binary asynchronous counter.	**(10)**	**4**	**3**
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 induction type energy meter in detail.	**(10)**	**5**	**2**

PART- C (1x 10=10Marks)

(Q.No.26 is compulsory)

		Marks	CO	RBT LEVEL
26.	The input power to a three phase AC motor is measured as 5 kW. If the voltage and current to the motor are 400 V and 8.6 A respectively. Determine the power factor of the system?	**(10)**	**1**	**5**

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