Register Number:……..

KUMARAGURU
college of technology
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B.E/B.TECH DEGREE EXAMINATIONS: NOV/DEC 2023

(Regulation 2018)

Second Semester

BIO TECHNOLOGY

U18EEI2208**:** Basic Electrical and Electronics Engineering

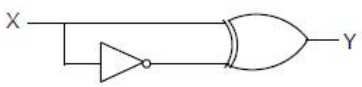
COURSE OUTCOMES

CO1: Solving basic DC and AC circuits
CO2: Select suitable DC machine for given application
CO3: Select suitable AC machine for given application
CO4: Characterize logic gates, semiconductor devices according to their applications
CO5: Identify electronic components and use them to design simple circuits

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	State Kirchoff's laws.	CO1	[K_1]
2.	Four equal value resistors are connected in series. An emf of 5volts is applied across the combination and 2.5 mA is measured from the source. What is the value of each resistor?	CO1	[K_3]
3.	Define power and power factor.	CO1	[K_1]
4.	What is slip? Specify the slip range.	CO3	[K_1]
5.	State the principle of DC generator.	CO2	[K_2]
6.	Differentiate core type and shell type transformers.	CO2	[K_2]
7.	Show the symbol of PN junction diode and Zener diode.	CO5	[K_1]
8.	What happens to a transistor when both junctions are reverse biased?	CO4	[K_4]
9.	Convert 1011101010_2 to octal and hexadecimal numbers.	CO4	[K_3]
10.	What is the output of the logic circuit given below	CO5	[K_4]

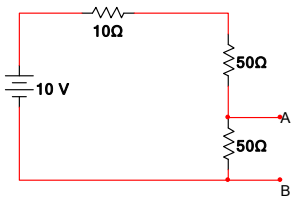


Answer any FIVE Questions:-
PART B (5 x 4 = 20 Marks)
(Answer not more than 80 words)

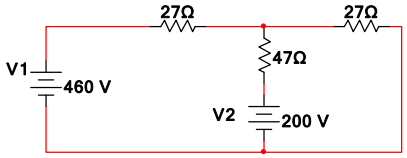
11.		A resistance R is connected in series with a parallel circuit comprising two resistors 12Ω and 8Ω respectively. The total power dissipated in the circuit is 70 watts when the applied voltage is 22 volts. Calculate the value of R.		CO1	[K3]
12.		Evaluate & express the result in rectangular form $(2\angle 30°)(5\angle -110°)(1+j2)$		CO1	[K3]
13.		Describe the working of single phase transformer.		CO2	[K2]
14.		With neat circuit and waveform, explain how an alternating voltage is rectified using half-wave rectifier.		CO5	[K4]
15.		Simplify the following Boolean expression: $W = \overline{A}\overline{B}\overline{C} + \overline{A}B\overline{C} + A\overline{B}\overline{C} + AB\overline{C}$		CO4	[K3]
16.		Draw the symbol of basic AND, OR, NOT and XOR gates and show their truth tables.		CO5	[K1]

Answer any FIVE Questions:-
PART C (5 x 12 = 60 Marks)
(Answer not more than 300 words)

17.	a)	What is the voltage V_{AB} across the resistor shown in figure?	4	CO1	[K3]



	b)	Obtain the current in each branch of the network shown in figure below using mesh current method.	8	CO1	[K3]



18.	a)	A coil having resistance 25 Ω & inductance 0.221H is connected in series with a 66.3μF capacitor across 150V, 60Hz supply. Calculate, (i). Equivalent impedance (ii). Current	4	CO1	[K3]
	b)	Determine the Form factor and peak factor of a pure sinusoidal waveform	8	CO1	[K4]
19.	a)	Explain the constructional features and working principle of DC motor.	8	CO2	[K2]
	b)	State the applications of single phase and three phase induction motors.	4	CO3	[K1]
20.	a)	Explain the working of NPN transistors.	6	CO4	[K2]
	b)	Differentiate JFET and MOSFET.	6	CO4	[K2]
21.	a)	Obtain the sum of products for the Boolean function using k-map, $F(A,B,C,D) = \sum m(0,1,2,4,5,6,8,9,12,13,14)$	6	CO4	[K3]
	b)	Construct 2x4 decoder circuit using logic gates.	6	CO5	[K3]
22.	a)	Compare series and parallel circuits.	4	CO1	[K2]
	b)	Show how a Zener diode can be used to regulate the output voltage.	8	CO5	[K3]

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