Q. Code:911046

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

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

First Semester

EE18151 – BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to AE, BT, CE, CS, IT, MR and ME)

(Regulation 2018)

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

CO1 Study the fundamental laws governing electrical circuits and to describe the working of measuring instruments.
CO2 Understand the construction and characteristics of different electrical machines.
CO3 Describe the fundamental behavior of different semiconductor devices and circuits.
CO4 Learn the fundamental concepts of digital electronics circuits.
CO5 Recognize the type of signals, data transfer and able to apply in communication systems.

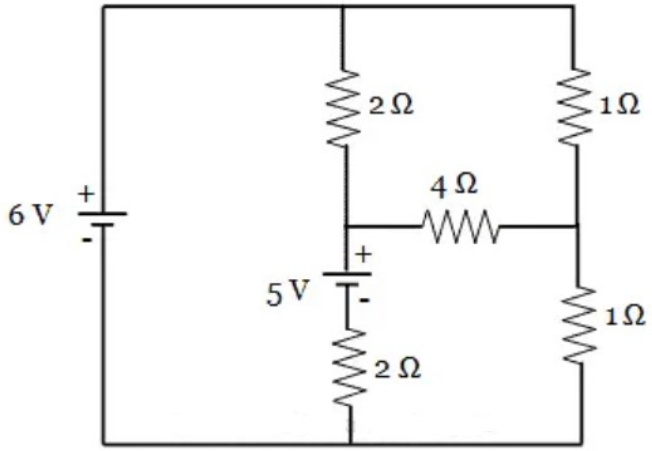
PART- A (10x2=20Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	State Ohm's law.	**1**	**1**
2.	Define power factor and draw the phasor diagram for pure capacitive circuit.	**1**	**2**
3.	Name the methods adopted to make the single phase induction motors self start.	**2**	**1**
4.	Write the expression for torque equation of DC motor.	**2**	**1**
5.	What are the applications of PN junction diode.	**3**	**3**
6.	Differentiate avalanche breakdown and zener breakdown.	**3**	**2**
7.	Convert the decimal number 139_{10} into a equivalent binary number.	**4**	**3**
8.	Draw the symbol and write the truth table of NAND gate.	**4**	**2**
9.	What is the difference between analog and digital signals.	**5**	**2**
10.	Draw the block diagram of communication system.	**5**	**1**

PART- B (5x 14=70Marks)

		Marks	CO	RBT LEVEL
11. (a)	For the circuit shown below, determine the mesh currents and branch currents using mesh analysis.	**(14)**	**1**	**3**



(OR)

	(b)	With neat sketch, explain the working principle of moving iron instruments, also derive its deflecting torque equation.	**(14)**	**1**	**3**
12.	**(a)**	Explain the construction and working principle of DC Generator with neat diagram.	**(14)**	**2**	**2**
		(OR)			
	(b)	Explain the construction and working principle of single phase transformer.	**(14)**	**2**	**2**
13.	**(a)**	**(i)** Describe the working of PN junction diode in forward and reverse bias condition.	**(7)**	**3**	**3**
		(ii) Sketch the circuit diagram and the operation of half-wave rectifier with help of necessary waveforms.	**(7)**	**3**	**3**
		(OR)			
	(b)	Briefly explain the input and output characteristics of CB configuration of a NPN transistor.	**(14)**	**3**	**3**
14.	**(a)**	**(i)** Describe the half adder with the truth table and logic circuit.	**(7)**	**4**	**3**
		(ii) Draw the logic diagram of SISO shift register and explain its working..	**(7)**	**4**	**3**
		(OR)			
	(b)	Discuss briefly about the working of 4-bit ripple counter.	**(14)**	**4**	**3**
15.	**(a)**	Draw the block diagram of TV transmitter and TV receiver. Explain its working in brief.	**(14)**	**5**	**3**
		(OR)			
	(b)	Explain about optical fibre communication system using a block diagram.	**(14)**	**5**	**3**

PART- C (1x 10=10Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Derive expressions for impedance, power factor and current of a RL series circuit connected across alternating current source. Draw also the phasor diagram.	**(10)**	**1**	**4**