Q. Code: 228947

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

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

First Semester

EE18151 – BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Regulation 2018 / 2018 A)

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.

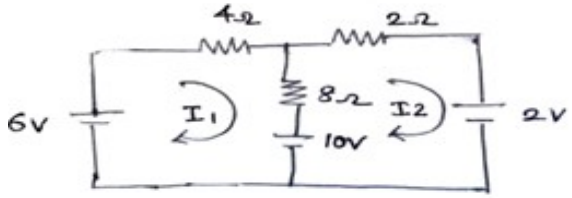
PART- A(10x2=20Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	State the type of circuit given in the description. Justify your answer. A circuit in which components are connected to the same voltage and the current divides between the various components according to their resistance.	**1**	**3**
2.	A bulb is rated as 230 V, 100 W. Find the rated current and resistance of the filament.	**1**	**3**
3.	What is the function of commutator in a DC generator?	**2**	**2**
4.	Why transformers are not working with DC supply.	**2**	**3**
5.	Name any two types of diode and draw its symbol.	**3**	**2**
6.	Define BJT? What are the types?	**3**	**3**
7.	Name the logic gate used in half adder circuit and its truth table.	**4**	**2**
8.	Write the types of flip-flop.	**4**	**2**
9.	Enumerate the major elements of communication system.	**5**	**3**
10.	List the types of modulation.	**5**	**3**

PART- B (5x 14=70Marks)

			Marks	CO	RBT LEVEL
11. (a)	**(i)**	Find the mesh currents of the given circuit using mesh analysis.	**(7)**	**1**	**3**



	(ii)	Describe the principle and operation of moving coil instrument in detail.	**(7)**		

(OR)

(b)	**(i)**	A series circuit has R=50Ω and L=10 mH is supplied with 230V,50 Hz single phase AC supply. Find (i) Inductive reactance	**(7)**	**1**	**3**

(ii) Impedance (iii) Current (iv) Power factor of the circuit.

	(ii)	Describe the principle and operation of moving iron instrument in detail.	**(7)**		
12. (a)	**(i)**	What type of emf is induced in case of DC generator and explain the construction with suitable diagram.	**(7)**	**2**	**3**
	(ii)	A 4-pole, DC generator has 400 conductors on its armature. The flux per pole is 0.35 Wb. The speed of rotation of the armature is 1500 RPM. Calculate the generated EMF when the armature is Lap and wave wound.	**(7)**	**2**	**3**
		(OR)			
(b)	**(i)**	Describe any one starting method of single phase induction motor in detail.	**(7)**	**2**	**3**
	(ii)	Determine developed torque of 230 V, 6-pole DC motor with 700 conductors lap-connected supplying a load of 8.2 kW by taking 45 A from the mains. The flux per pole is 25 mWb .	**(7)**	**2**	**3**
13. (a)	**(i)**	Write the operation of full wave bridge rectifier with the required Wave forms.	**(7)**	**3**	**3**
	(ii)	Explain the input and output characteristics of transistors in Common Emitter configuration.	**(7)**	**3**	**3**
		(OR)			
(b)	**(i)**	Discuss the operation P-N junction diode with its characteristics.	**(7)**	**3**	**3**
	(ii)	Explain the operation of Zener voltage regulator with the required circuit and characteristics.	**(7)**	**3**	**3**
14. (a)		Explain the operation of full adder using the logic circuits using gates, and truth table , Boolean expression for sum and carry.	**(14)**	**4**	**2**
		(OR)			
(b)		Explain the operation of 4 bit Asynchronous counter with a neat diagram.	**(14)**	**4**	**2**
15. (a)	**(i)**	Discuss the Fiber Optic communication system and its application.	**(7)**	**5**	**3**
	(ii)	Explain satellite communication.	**(7)**	**5**	**3**
		(OR)			
(b)		Discuss anyone method for suppressing the unwanted sideband. Support your answer with the required diagrams.	**(14)**	**5**	**3**

PART- C (1x 10=10Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Three identical coils, each of resistance 10Ω and inductance 42mH are connected in star to a 415V, 50 Hz, 3-phase supply. Determine the total power dissipated in the coil.	**(10)**	**1**	**5**