A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 52308

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

Second Semester

Civil Engineering

15UEE208 - BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Mechanical Engineering, Chemical and Agriculture Engineering)

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. A circuit contains two un-equal resistances in parallel CO1-R

   (a) current is same in both

   (b) large current flows in larger resistor

   (c) potential difference across each is same

   (d) smaller resistance has smaller conductance

2. Which wave has the least form factor? CO1-R

   (a) Square wave (b) Rectangular wave (c) Sine wave (d) Triangular wave

3. The purpose of a commutator in a dc generator is to_____ CO2-R

   (a) Increase output voltage (b) Reduce sparking at brushes

   (c) Provide smoother output (d) Convert the induced ac into dc

4. The starting torque of a single phase induction motor is_____ CO2-R

   (a) High (b) Medium (c) Low (d) Zero

5. Which of the following doping will produce a p-type semiconductor CO3-R

   (a)Germanium with phosphorus (b) Silicon with Germanium

   (c) Germanium with Antimony (d) Silicon with Indium

6. A BJT is said to be operating in the saturation region if_____ CO3-R

(a) Both the junctions are reverse biased

(b) Base-emitter junction is reverse biased & base-collector junction is forward biased

(c) Base-emitter junction is forward biased & base-collector junction is reverse biased

(d) Both the junctions are forward biased

7. Convert octal 377 to binary. CO4-R

(a) 11101101 (b)) 01111011 (c) 10110111 (d) 11111111

8. Exclusive-OR(XOR) logic gates can be constructed from ……..logic gates CO4-R

(a) OR gates only (b) AND gates and NOT gates

(c) AND gates, OR gates, and NOT gates (d) OR gates and NOT gates

9. In amplitude modulation, frequency is_____ CO5-R

(a) constant (b) zero (c) variable (d) one

10. In order to reduce interference, the signal should be_____ CO5-R

(a) amplified (b) multiplied (c) demodulated (d) modulated

PART – B (5 x 2= 10Marks)

11. State Ohm's law. CO1-R

12. Give the types of transformers based on their construction. CO2-R

13. List the applications of Zener diode. CO3-R

14. Which gates are called as the universal gates? CO4-R

15. Mention the need for Modulation. CO5-R

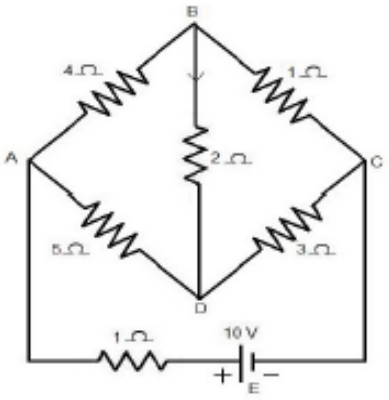
PART – C (5 x 16= 80Marks)

16. (a) (i)Three resistances of values 2Ω,3Ω and 5Ω are connected in series across 20 V,D.C supply .Calculate (a) equivalent resistance of the circuit (b) the total current of the circuit (c) the voltage drop across each resistor and (d) the power dissipated in each resistor. CO1-App (10)

(ii) State and explain Kirchoff's law CO1-App (6)

Or

(b) In the circuit shown, compute the current through the 2 ohm resistor and the total current delivered by the battery. CO1-App (16)



17.	(a)	Elucidate construction and principle of operation of DC generator with neat sketch.	CO2-U	(16)
		Or		
	(b)	(i) With a neat sketch, explain the constructional details and working of a Transformer.	CO2-U	(8)
		(ii) Elaborate about the construction and working of attraction type moving-iron instruments with a neat diagram.	CO2-U	(8)
18.	(a)	Describe the working of a PN junction diode with neat diagrams. Also explain its V-I characteristics.	CO3-U	(16)
		Or		
	(b)	Illustrate about the working of the CE configuration BJT and discuss about its input and output characteristics..	CO3-U	(16)
19.	(a)	(i) Reduce the following expressions using Boolean Algebra. Y=A'B'C'+A'B'C+AB'C'+ABC	CO4-U	(8)
		(ii) Realize the given expression using only NAND gates and Inverters. Y=ABC+A'B'C'	CO4 U	(8)
		Or		
	(b)	Draw a logic circuit for the function F=AB+ABC+AB (D+E) and simplify the expression	CO4-U	(16)

20. (a) Discuss about the principles behind AM and FM. Compare and contrast the two types of modulation. CO5-U (16)

Or

(b) Outline the block diagram of optical fiber communication systems and paraphrase the various elements available CO5-U (16)