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

Question Paper Code: 52308

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

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. The resistance R_1 and R_2 are connected in parallel. The ratio of values of resistance R_1 : R_2 is 4:1. The currents in R_1:R_2 will be equal to CO1- R

   (a) 1:4 (b)1:1 (c) 4:1 (d) 4:4

2. Form Factor is defined as CO1- R

   (a) RMS value / Peak value (b) Maximum value / RMS value

   (c) RMS value / Average value (d) Effective value / RMS value

3. The power stated on the name plate of any motor is always CO2- R

   (a) the power drawn in kVA (b) the output power at the shaft

   (c) the power drawn in kW (d) the gross power

4. In moving coil instruments, the scale used is CO2- R

   (a) non-linear scale (b) linear scale (c) square law scale (d) log scale

5. The main reason why electrons can tunnel through a P-N junction is that CO3- R

(a) they have high energy (b) barrier potential is very low

(c) depletion layer is extremely thin (d) impurity level is low

6. When used in circuit, Zener diode is always CO3- R

(a) forward biased (b) connected in series

(c) connected in parallel (d) reverse biased

7. The only function of a NOT gate is to CO4- R

(a) stop a signal (b) recomplement a signal

(c) invert an input signal (d) act as universal gate

8. A NOR gate is ON only when all its inputs are CO4- R

(a) ON (b) +ve (c) high (d) OFF

9. Which region of the electromagnetic spectrum is used for communication purposes? CO5- R

(a) infrared (b) ultra-violet (c) visible (d) below ultra-violet

10. The frequency modulation technique used in many modern receivers was invented in 1933 by CO5- R

(a) Armstrong (b) Marconi (c) De Forest (d) Fleming

PART – B (5 x 2= 10Marks)

11. An electric iron is rated for 1000W and is to be operated from a 250V supply. Find the value of resistance of the heating element. CO1- R

12. Write the applications of DC series motor. CO2- R

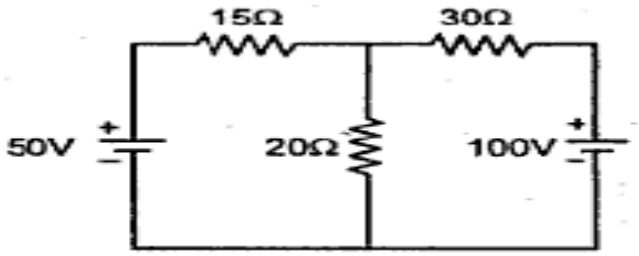
13. Draw the symbol of PN Junction Diode. CO3- R

14. List the distinct advantages of digital systems over analog systems CO4- R

15. Mention different types of Modulation. CO5- R

PART – C (5 x 16= 80Marks)

16.	(a)	(i) Derive the Voltage – Current relations of a pure inductive circuit. Also draw the phasor diagram.	CO1- App	(8)
		(ii)Across the 220V supply terminals in a house, an electric iron having a resistance of 100 ohms, and two electric lamps of resistances 500 ohm and 900 ohm each are connected. Find the total current and power taken from the supply mains.	CO1- App	(8)
		Or		
	(b)	(i) Apply Kirchoff's voltage law to the circuit given below and find the mesh currents.	CO1- App	(8)



		(ii) Compare the series and parallel DC circuit.	CO1- U	(8)
17.	(a)	Explain the parts of a practical Generator.	CO2 -U	(16)
		Or		
	(b)	How single phase Induction Motors are classified? Explain any two types.	CO2 -U	(16)
18.	(a)	(i) Analyze the V-I characteristics of PN junction Diode.	CO3- Ana	(8)
		(ii) Write short notes on transistor biasing.	CO3- U	(8)
		Or		
	(b)	Draw the common base test circuit of bipolar junction transistor. Also discuss the common base static characteristics.	CO3- Ana	(16)
19.	(a)	(i) Explain with truth table the OR Gate and AND Gate.	CO4- U	(8)
		(ii) Develop a circuit for the following expressions using AND, OR and NOT Gates.	CO4- App	(8)

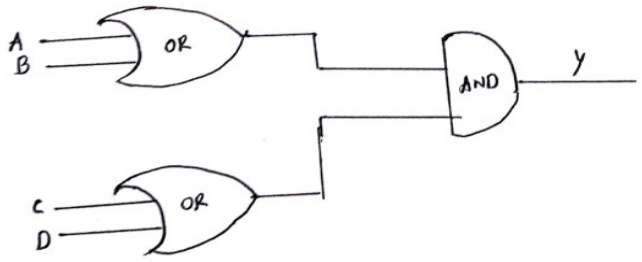
a) $Y = ABC + D$

b) $Y = (A + B)(\bar{C} + D)$

Or

(b) (i) Explain with truth table NOR Gate and NAND Gate. CO4 -U (8)

(ii) Write the Boolean equation for the following logic gate circuit. Also develop the truth table. CO4 -U (8)



20. (a) (i) With a block diagram explain the elements of a communication system. CO5- U (8)

(ii) Compare Amplitude Modulation and Frequency Modulation. CO5- U (8)

Or

(b) Write short notes on

(i) Satellite communication CO5- U (8)

(ii) Optical Fibre communication CO5- U (8)