Reg. No. :

Question Paper Code: 51328

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

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. Which of the following is active element?

    (a) Voltage source   (b) Capacitance
    (c) Resistance   (d) Inductance

2. Nodal analysis is implemented by the help of

    (a) KCL Law   (b) KVL Law
    (c) Both (a) and (b)   (d) None of these

3. A motor converts

    (a) Mechanical energy into electrical energy
    (b) Chemical energy into electrical energy
    (c) Electrical energy into Mechanical energy
    (d) Electrical energy into chemical energy

4. An instrument that is capable of measuring only DC is

    (a) Moving Coil   (b) Moving Iron
    (c) Thermocouple   (d) None of these

5. The electrical energy consumed by a coil is stored in the form of

    (a) an electrical field   (b) a force field
   (c) an electrostatic field   (d) a magnetic field

6. Diode characteristic curve is a plot between Diode characteristic curve is a plot between

   (a) current and time   (b) voltage and time

   (c) voltage and current   (d) none of these

7. Convert the following binary number 01011_2 to decimal.

   (a) 11   (b) 35   (c) 15   (d) 10

8. The NAND gate output will be low if the two inputs are

   (a) 00   (b) 01   (c) 10   (d) 11

9. The two basic types of signals are analog and

   (a) digilog   (b) digital   (c) vetilog   (d) sine wave

10. Modulation is done in

    (a) Transmitter

    (b) Radio receiver

    (c) Between transmitter and radio receiver

    (d) None of these

PART - B (5 x 2 = 10 Marks)

11. State Ohm's Law.

12. List out the applications of capacitor start and capacitor run induction motor.

13. Give the comparison between Zener diode and PN junction diode.

14. State the associative property of Boolean algebra.

15. Define Modulation index of a signal.

PART - C (5 x 16 = 80 Marks)

16. (a) Determine mesh current of the circuit shown in below figure.   (16)
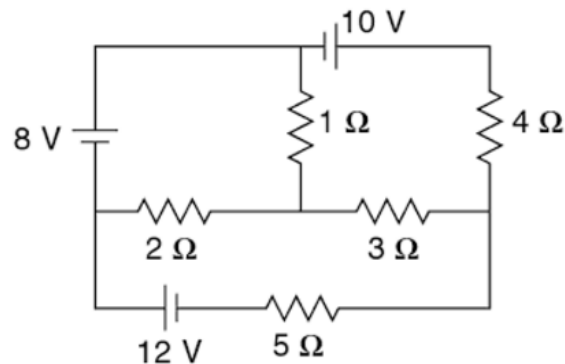
(b) (i) Explain in detail about RMS value of AC Voltage. (8)

(ii) Explain in detail about Average value of AC Voltage. (8)

17. (a) Explain the working principle and constructional details of DC generator. (16)

Or

(b) Explain in detail about construction and working of permanent magnet moving coil instrument. (16)

18. (a) Explain in detail about construction, operation, VI characteristics and applications of PN Junction diode. (16)

Or

(b) Explain in detail about operation, input and output characteristics of common emitter configuration of BJT. (16)

19. (a) Draw and explain the operation of AND, OR, NOT, NAND and NOR gates with suitable truth table. (16)

Or

(b) Simply the following Boolean functions using Boolean laws and theorems

(i) C + (BC) (4)

(ii) (AB)(A + B)(B + B) (6)

(iii) (A + C)(AD + AD) + AC + C (6)

20. (a) With neat diagram explain the principle of operation of amplitude modulation and frequency modulation. (16)

Or

(b) (i) With neat block diagram explain the basic components of satellite communication. (8)

(ii) Explain the block diagram of optical fiber communication systems. (8)

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