Register Number: ……..

B.E / B.TECH DEGREE EXAMINATIONS: MAY/JUNE 2014

(Regulation 2013)

Second Semester

U13EET211 : BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to AUTO, MECH & BIO)

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Which of the following is not an electrical quantity?
   a) Voltage b) Current
   c) Distance d) Power
2. A 220 Ωresistor dissipates 3 W. The voltage is _____
3. What is the magneto motive force (mmf) of a wire with 8 turns carrying three amperes of current?
   a) 12A b) 24A
   c) 48A d) 8A
4. A coil of wire is placed in a changing magnetic field. If the number of turns in the coil is decreased, the voltage induced across the coil will _____
5. Power factor of resistive load is
   a) 1 b) 2
   c) Less Than 1 d) Greater Than 1
6. In a Series R- L circuit, current always _____ behind the applied voltage.
7. The starting capacitor of a single phase motor is
   a) Electrolytic Capacitor b) Ceramic Capacitor
   c) Paper Capacitor d) Film Capacitor
8. The speed of a D.C. series motor is inversely proportional to _____
9. When forward bias is applied to a junction diode, it
   a) Increases the Potential Barrier. b) Decreases the Potential Barrier.
   c) Reduces the Majority-Carrier current to Zero d) Reduces the Minority-Carrier Current to Zero.
10. Instead of 2input AND gate, an NAND GATE is CONNECTED then O/P is_____

PART B (10 x 2 = 20 Marks)

(Not more than 40 words)

11. State ohm's Law.
12. Define Resistivity.
13. Define magnetic flux density.
14. State faraday's law of electromagnetic induction.
15. A voltage of 200 sin 314t is applied to a pure resistive circuit of value of 20 ohms. Determine the following (i) Equation for the instantaneous current following through the circuit. (ii) Power dissipated in the resistor (iii) Also draw the phasor diagram.
16. Define RMS value.
17. What is back emf?
18. What are the different types of single phase induction motors? How do you make them self-starting?
19. List the advantages of transistors?
20. What is a Logic gate?

PART C (5 x 14 = 70 Marks)

(Not more than 400 words)

Q.No. 21 is Compulsory

21. (i) Derive an expression for the energy stored in the capacitor. (10)
    (ii) Mention the relation between Voltages, Current, Resistance and Power (4)

22. a) Explain the concept of self and mutual inductance

    (OR)

    b) Derive an expression for energy stored in a magnetic field.

23. a) Derive the Expression for Current through Series R-L-C circuit.

    (OR)

    b) An RLC series circuit has a resistance of 15 ohm ,inductance 150 mh and capacitance of 25 μf connected in series across 200V,50 Hz supply. Find the values of inductive and capacitive reactance, impedance, current, power factor, voltage across R, L.Also draw the phasor diagram.

24. a) Explain in detail about Construction and Operation of DC motor with neat sketch.

(OR)

b) Explain the principle of operation of three phase induction motor.

25. a) Write the truth tables for the following logic gates and explain.
OR – Gate AND – Gate NOT – Gate NAND – Gate NOR – Gate Ex-OR – Gate Ex-NOR - Gate.

(OR)

b) Explain the working principle of full wave rectifier circuit with suitable waveforms.

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