Register Number: ……..

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

(Regulation 2009)

Third Semester

EEE251:BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING

(Common to AERO & TXT)

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The power factor of a purely resistive circuit is
   a) Zero. b) Unity.
   c) Lagging. d) Leading
2. The power taken by a 3-phase load is given by the expression
   a) $\sqrt{3}\ V_L\ I_L \cos\phi$ b) $3\ V_L\ I_L \sin\phi$
   c) $\sqrt{3}\ V_L\ I_L \sin\phi$ d) $\sqrt{3}\ V_L\ I_L \sin\phi$
3. Speed of the stator field of an Induction motor is
   a) Synchronous speed a) Less than Synchronous
   c) Any speed d) Slip Speed
4. The effect of an air gap in a magnetic circuit of DC motor is to:
   a) Increase the reluctance b) Reduce the flux density
   c) Divide the flux d) Reduce the MMF
5. What is normally used to convert the alternating voltage produced by rotating a coil in a magnetic field, into a direct voltage?
   a) A regulator b) A Commutator
   c) A Rectifier d) A Transformer
6. Energy Meter is a _____ meter.
   a) Integrating a) Differentiating
   c) Dividing d) Multiplying
7. The forbidden energy gap in semiconductors
   a) Lies just below the valance band b) Lies just above the conduction band
   c) Lies between the valence band and the conduction band d) Is the same as the valence band
8. The following components are all active components
   a) A Resistor and An Inductor b) A Diode, a BJT and an FET
   c) A Capacitor, and An Inductor d) An Opamp, A BJT and Thermionic Triode

9. Indentify the universal gate
   a) AND b) EX-OR
   c) NAND d) OR
10. Flip flop is an _____ bit memory device.
    a) 1 b) 2
    c) 4 d) 3

PART B (10 x 2 = 20 Marks)

11. State Ohms law
12. Calculate the individual current in two resistances of 10 Ω and 15 Ω connected in parallel. The total current is 15A
13. Write the EMF equation of transformer
14. Draw the speed torque charactertics of induction motor
15. What are the configurations of BJT?
16. State the applications of photo conductive transducer
17. List few applications of an Op-amp.
18. What are the breakdowns occurs in zener diode?
19. Draw the basic model of half adder logic circuit.
20. Convert the following number into octal.
    i.) $(1010)_2$ ii.) $(26)_{16}$

PART C (5 x 14 = 70 Marks)

21. a) Two resistors 12 ohms and 6 ohms are connected in parallel and this combination is connected in series with a 25 ohm resistance and a battery. Determine the EMF of the battery if potential difference across the 6 ohm resistance is 6 volts.

(OR)

b) Derive the expression for RMS value, Average value, Form factor and peak factor for a sinusoidal waveform

22. a) Draw the electrical and mechanical characteristics of DC shunt, series and compound motors and explain its behavior.

(OR)

b) Enlighten the starting methods of single phase induction motor with neat sketch

23. a) (i) Explain the working of Zener diode and draw its V-I characteristics (10)

(ii) State the applications of Light Emitting Diode and MOSFET (4)

(OR)

b) (i) With neat diagram explain the working of FET (10)

(ii) Write the applications of Photo Diode and Photo transistor (4)

24. a) (i) Outline the circuit and waveform of full wave rectifier and derive its ripple factor. (10)

(ii) What are the characteristics of ideal OP-Amp (4)

(OR)

b) (i) Draw the block diagram of Inverting and non inverting Op-Amp and explain its function (12)

(ii) List the applications of RC coupled amplifier (2)

25. a) Elucidate the operation of logic gates with suitable diagram and truth tables.

(OR)

b) Sketch the block diagram of RS,T and JK flip flops and explain the function

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