Register Number: ……

B.E/B.TECH. DEGREE EXAMINATIONS: NOV/DEC 2010

Third Semester

EEE251: BASIC ELECTRICAL & ELECTRONICS ENGINEERING

(Common to Aeronautical Engineering & Textile Technology)

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

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1 Ohm's law is applicable for

a) 0^0C b) 36^0C c) Constant temperature d) 100^0C

2 In a capacitor, the voltage is _____ with the current through it

a) Lagging b) Leading c) inplane d) out of phase

3 The voltage equation of a DC motor is

a) $E_b = V-I_aR_a$ b) $V=E_b-I_aR_a$ c) $E_b= V+I_aR_a$ d) $V=E_b+I_aR_a$

4 Star-delta starter is used for

a) DC series motor b) 3 phase induction motor

c) single phase induction motor d) DC shunt motor

5 BJT is a _____ device

a) Voltage controlled b) current controlled

c) resistance controlled d) power controlled

6 The output of the phototransistor depends on _____

a) Voltage applied to it b) light falls on it

c) resistance of the junction d) power rating of it

7 The device that can be used as a voltage regulator is _____

a) PN diode b) BJT c) Zener diode d) FET

8 The gain of a non inverting amplifier with feedback resistance R_f and input resistance $R_1$is _____

a) $1+ (R_f/R_1)$ b) $1+ (R_1/R_f)$ c) R_f/R_1 d) R_1/R_f

9 The decimal number 10 in binary form is _____

a) 1010_2 b) 0101_2 c) 1001_2 d) 1100_2

10 Which of the following can be called as latch?

a)JK flipflop b) RS flipflop c) D flipflop d) T flipflop

PART B (10 x 2 =20 Marks)

11 Define electric power in a electric circuit and relate it with energy.

12 Define Power factor.

13 Classify single phase induction motors.

14 Draw the electrical characteristics of a DC shunt mtor.

15 Distinguish between PN diode and Zener diode.

16 Draw the drain characteristics of a FET.

17 What is the purpose of filter in an electric circuit.

18 List the ideal characteristics of an θ_p-amp.

19 What are basic gates and why they are so called?

20 Write the truth table for a full adder.

PART C (5 x14 =70 Marks)

21. a) (i) An a.c circuit consists of a pure resistive of 10Ω and is connected across an a.c supply 230V, 50Hz.Calculate i) current ii) power consumed iii) equation for V and I (10)

(ii) Derive the impedance of a series RLC circuit. (4)

(OR)

b) (i) Derive the RMS value, Average value and form factor for a sinusoidal wave form. (10)

(ii) Draw the phasor diagram for voltage and current of a series RC circuit (4)

22. a) With neat diagram, explain the construction and working of a DC motor.

(OR)

b) (i) What are the factors to be considered for the selection of motor for textile application? (7)

(ii) Write short notes on capacitor start capacitor run motors (7)

23. a) What are the different configurations of NPN type BJT. Explain about CE configuration with relevant characteristics.

(OR)

b) With neat diagram, explain the working of (i) photodiode (ii) photo transistor (Include the relevant characteristics)

24. a) What are the different types of amplifier circuits and explain RC coupled amplifier with neat diagram.

(OR)

b) Prove that Op – amp can be used for performing the following mathematical operations

(i) Addition

(ii) Subtraction

(iii) Integration

(iv) Differentiation

25. a) (i) Convert the given decimal number 1228 to (7)

(a) binary

(b) Hexa decimal

(c) Octal

(ii) Construct all the basic gates using NAND gate (7)

b) (i) Design a full adder circuit from its truth table

(ii) Discuss about master slave flip flop.

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