Register Number: ……..

B.E.DEGREE EXAMINATIONS APRIL/MAY 2010

Second Semester

MECHATRONICS ENGINEERING

ECE280: Electronic Devices and Circuits

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

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. The superposition theorem is applicable to

   A. current only B. voltage C. both current and voltage D. current, voltage and power

2. Which parameter is widely used in transmission line theory

   A. Z parameter B. Y parameter C. ABCD parameter D. h parameter

3. FET is a device which has

   A. high input impedance and is current controlled

   B. low input impedance and is current controlled

   C. high input impedance and is voltage controlled

   D. low input impedance and is voltage controlled

4. The majority charge carriers in an N-type semiconductors are

   A. holes B. electrons C. neutrons D. photons

5. The bridge rectifier circuit requires ….number of diodes.

   A. one B. two C. three D. four

6. The circuit which is used to remove unwanted portion of a waveform is called as

   A. clamper B. limiter C. clipper D. Rectifier

7. The condition for a sustained oscillations is

   A. $A\beta < 1$ B. $A\beta > 1$ C. $A\beta = 1$ D. $A\beta = 10$

8. The other name for Voltage shunt feedback amplifier is

   A. Voltage Amplifier B. Current Amplifier

   C. Transresistance Amplifier D. Tranconductance Amplifier

9. Monostable Multivibrator has

   A.1 stable and 1 quasi stable states B. 2 stable states C. no stable states D. no quasi stable states

10. CMRR in Op-Amp stands for

   A. Common Mode Rejection Ratio B. Continuous Mode Rejection Ratio

   C. Common Mode Ripple Ratio D. Continuous Mode Ripple Ratio.

PART B (10 x 2 = 20 Marks)

11. State Kirchoff's current law.
12. The power dissipation in each of three parallel branches is 1 W. What is the total power dissipation of the circuit?
13. Draw the symbol of FET.
14. State diode equation.
15. What is rectifier? Give its types.
16. State any two differences between clipper and clamper.
17. What is the gain of positive and negative feedback amplifier?
18. What is the frequency range for RF amplifier?
19. Draw the circuit of Wein bridge oscillator.
20. What are the terminals of a comparator?

PART C (5 x 14 = 70 Marks)

21. (a) Explain in detail about Star –Delta transformation.

(OR)

(b) (i) Write short notes on transmission parameters. (7)

(ii)Write short notes on series connection of two port network. (7)

22. (a) Briefly describe the operation and VI characteristics of a PN junction diode.

(OR)

(b) Explain the operation of a transistor showing all the current components and derive the relation between current gain α and β.

23. (a) With a neat sketch, explain the working of a Half wave rectifier using Diode and derive its parameters.

(OR)

(b) Explain how voltage is regulated using series and shunt type voltage regulator.

24. (a) Discuss in detail about the working principle of the Hartley Oscillator.

(OR)

(b) Draw the hybrid π model of BJT in CE connection and derive the equation for input impedance, output impedance, voltage gain and current gain.

25. (a) How the Operational Amplifier can be used as an inverting, non-inverting amplifier, adder and subtractor.

(OR)

(b) With necessary circuit, explain the working principle of a Wein bridge oscillator. What determines the frequency of oscillation?

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