

ANNA UNIVERSITY COIMBATORE

B.E. / B.TECH. DEGREE EXAMINATIONS : JAN – FEB 2009

REGULATIONS : 2007

SECOND SEMESTER – CSE / IT

070290003 / 4EC1202 - BASICS OF ELECTRONICS ENGINEERING

Time : 3 Hours

Max: 100 Marks

PART - A

(20 x 2 = 40 Marks)

ANSWER ALL QUESTIONS

1. Define the terms conductivity and mobility in a semiconductor.
2. Write the volt-ampere equation for a PN junction diode.
3. Distinguish between avalanche and Zener diode mechanisms.
4. Define the terms i) peak inverse voltage ii) ripple factor
5. Define the term stability factor.
6. Mention the advantages of collector to base bias.
7. What is early effect?
8. What is thermal runaway?
9. Draw an emitter follower circuit?
10. State Barkhausen criterion for oscillation
11. What makes the crystal oscillator produce stable oscillations?
12. Determine the frequency of an Hartley oscillator if $L_1=100 \mu\text{H}$, $L_2=1 \text{ mH}$, the coefficient of mutual inductance between L_1 and L_2 is $20 \mu\text{H}$ and $C=20\text{Pf}$.
13. State Demorgan's theorem.
14. Prove that $X.X=X$.
15. Write the reduced expressions for $A=XZ+XW+YZ+YW$.
16. Realize the expression using NAND gates $C=XY+YW$.
17. What is a latch?

18. What are pulse triggered devices?
19. State any two applications of shift registers.
20. What is D flipflop?

PART - B

(5 x 12 = 60 Marks)

ANSWER ANY FIVE QUESTIONS

21. i) Discuss the working of a PN junction diode under forward and reverse bias. (6)
ii) Show that a Zener diode can be used as a voltage regulator. (6)
22. i) Draw the circuit diagram of a CE amplifier and explain its working? (6)
ii) Explain how transistor can be operated as a switch. (6)
23. i) What is thermal runaway? State how it can be avoided? (6)
ii) Draw a comparison between CE, CB and CC transistor configurations? (6)
24. Derive the equation for power output and conversion efficiency of a Class A amplifier. (12)
25. Derive the frequency of oscillation in an RC phase shift oscillator with a neat circuit. (12)
26. Convert the binary number 110011001100 to
i) decimal ii) octal iii) hexadecimal iv) Gray code (4x3=12)
27. Reduce the following equation to MSP form using Karnaugh map
 $Z=X[\bar{Y}Q+\bar{Y}(WQ+\bar{W})]+XYWQ$ (12)
28. i) Explain the working of a JK flipflop. (6)
ii) Draw the diagram of a decade counter and explain its operation. (6)

*****THE END*****