

II B.Tech II Semester Supplementary Examinations, January 2005
DIGITAL CIRCUITS DESIGN AND APPLICATION
(Bio-Medical Engineering)

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) What is meant by slicer circuit and explain its importance.
(b) Explain the operation of a biased clipper circuit and mention its disadvantages.
(c) Explain briefly about piecewise characteristics of diode.
2. (a) Draw and explain the waveforms of collector coupled astable multivibrator.
(b) Show that $T=0.69RC$ in case of monostable multivibrator and draw the waveforms at base and collector of the circuit.
3. (a) Draw the circuit diagram and waveforms of a boot strap sweep circuit and explain its working.
(b) Explain how darlington pair reduces the slope error in bootstrap sweep circuit.
4. (a) What is a timer and explain its importance.
(b) Draw the block diagram of a timer and explain its operation.
(c) Explain the PIN function of a 555 Timer.
5. (a) What is meant by 1's complement, 2's complement and 10's complement and why 2's complement system is preferred in computer arithmetic.
(b) Convert the octal numbers into binary system.
 - i. $(25)_8$
 - ii. $(56)_8$
(c) Construct a logic circuit using only NAND gates for the following switching expression. $F=A+B[AC+(B+\overline{C})D]$
6. (a) What are universal gates. Explain the importance of universal gates.
(b) What is a decoder and explain its importance with a suitable example.
(c) Distinguish between a decoder and encoder.
7. (a) What is a flipflop and explain its importance in sequential circuits.
(b) Distinguish between TTL and CMOS ICs.
(c) What is a driver circuit? How it is used in driving a seven segment LED's.
8. Write short notes on:
 - (a) Decode counter and its importance in digital system

- (b) PLL applications
- (c) Relay driver circuits.

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