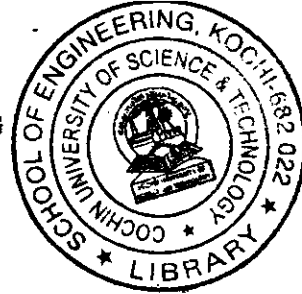


B.TECH. DEGREE III SEMESTER (SUPPLEMENTARY) EXAMINATION IN
INFORMATION TECHNOLOGY/COMPTUER SCIENCE AND ENGINEERING
JUNE 2002



**IT/CS 303 ELECTRONIC CIRCUITS AND
LOGIC DESIGN
(1998 Admissions)**

Time: 3 Hours

Maximum Marks: 100

- I. (a) Draw the circuit of an RC coupled amplifier and bring out clearly how its gain is affected by changes in input frequency. (14)
(b) What is meant by negative feedback? State the relationship of the gain of the amplifier with and without feedback. (6)
- OR**
- II. (a) State Barkhausen criteria. Explain the working of an LC oscillator with necessary circuit diagrams. (12)
(b) With a neat circuit diagram explain the working of a transformer coupled class A power amplifier. (8)
- III. (a) Explain SCR characteristics. (10)
(b) Design a circuit that clips the amplitude of the sinusoidal signal $10 \sin 314t$ to $\pm 4V$. (10)
- OR**
- IV. (a) Explain common mode and difference mode operation of a differential amplifier. (10)
(b) Explain the conditions under which an RC circuit will perform as an integrator. Draw the circuit diagram. (10)
- V. (a) Simplify the following:
(i) $A\bar{B} + \bar{A}BC + \bar{A}\bar{B}D + ABE + \bar{A}BF$
(ii) Complement of $(\bar{A} + B)CD$ (8)
(b) Reduce the following function using K-map and realize using NAND gates
 $F = \sum(0, 1, 2, 4, 5, 6, 8, 9, 12, 13, 14)$ (12)
- OR**
- VI. (a) What is an EX - OR gate? Draw an EX - OR gate using minimum number of NAND gate. State some applications. (12)
(b) Explain positive and negative logic system. (8)
- VII. (a) What is a ring counter? Explain its operation with necessary circuit diagram and waveforms. (10)
(b) Explain how an RS Flip-Flop can be converted into (i) JK flip-flop (ii) D flip-flop. (10)
- OR**
- VIII. (a) Draw the circuit diagram of a tri-state logic circuit and explain its operation. (12)
(b) Compare TTL and CMOS families. (8)
- IX. (a) Draw a basic bipolar RAM cell and explain its working. (10)
(b) What are the advantages of using programmable logic arrays? (10)
- OR**
- X. (a) Explain the working of a multiplexer. What are its applications? (10)
(b) Explain the difference between a decoder and a demultiplexer. (10)