B. Tech Degree III Semester Examination, December 2006

IT 304 ELECTRONIC CIRCUITS AND LOGIC DESIGN

(2002 Admissions onwards)

Time : 3 Hours Maximum Marks : 100

I. (a) Explain the construction of a FET. Draw the characteristics of an n – channel FET. (10)

(b) With neat circuit diagram discuss the working of a Class B push pull amplifier. (10)

OR

II. (a) Explain an RC coupled CE amplifier. What do you mean by the frequency response of an amplifier? How will you measure the bandwidth of an amplifier from its frequency response? (10)

(b) Detail on the after effects of different feedbacks on an amplifier. Give the advantages and disadvantages of positive and negative feedbacks. (10)

III. (a) Draw the block diagram of an ideal Op-Amp; and explain the function of each block. State different characteristics of an ideal Op-Amp. (10)

(b) With necessary diagrams and graphs explain the working of an SCR. (10)

OR

IV. (a) Discuss the working of a two level dipper. Draw the O/p waveform for a triangular input. (10)

(b) Discuss the working of an UJT relaxation oscillator. (10)

V. (a) Convert the following :

(i) $(67.721)_{10} = (\quad)_8$

(2) $(33.456)_8 = (\quad)_2$

(3) $(F3AB.CE)_{16} = (\quad)_{10}$

(4) $(11110101.011)_2 = (\quad)_8$

(5) $(7910)_{10} = (\quad)_{X-3}$ (10)

(b) What do you mean by universal gates? Implement all basic gates using universal gates. (10)

OR

VI. (a) Give the truth table of a full adder. Design and implement a full adder using its truth table. (10)

(b) Reduce the binary expression

$$Y = \sum m(0,4,7,9,11,13,15) + d(3,6).$$ (10)

VII. (a) With neat circuit diagram explain the working of a CMOS NAND gate. (10)

(b) What do you mean by 'race around' condition? Discuss two different methods to over come 'race around' problem. (10)

OR

VIII. (a) Draw the circuit diagram of a 5 – bit Ring counter. Explain its working with output waveforms. (10)

(b) Compare TTL, ECL and CMOS logic families. (10)

IX. (a) Design a 4:1 multiplexer using basic gates. (10)

(b) Explain the working of a BJT RAM cell. (10)

OR

X. (a) What do you mean by PLD? Discuss the differences between PROM, PAL and PLA. (10)

(b) Explain different types of semiconductor memories. (10)

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