

S.E. (Comp.) (Semester - III) Examination, May 2011

INTEGRATED ELECTRONICS

Duration : 3 Hours

Total Marks : 100

- Instructions : 1) Attempt five questions.
2) Attempt one question from each Module.
3) Assume suitable data if necessary.

MODULE - I

- Q1)** a) Explain the working of an Opamp as an integrator. What are its drawbacks and how are they overcome. [8]
b) Draw the block schematic of an Opamp and explain the function of each block. [6]
c) With the help of a neat diagram explain the working of zero crossing detector. [6]
- Q2)** Write a note on the following: [20]
a) Noninverting comparator.
b) Voltage follower.
c) Instrumentation Amplifier.
d) Characteristics of Ideal op-amp.
e) Ideal voltage transfer curve.

MODULE - II

- Q3)** a) Explain the applications of IC 723 Regulator. [8]
b) Explain the working and applications of a free running multi vibrator. [8]
c) Explain the operating principle of a PLL. [4]
- Q4)** a) Draw the internal diagram of IC 55 timer and explain its working. [8]
b) Write a note on the following. [12]
i) Applications of PLL.
ii) Voltage Regulator using LM105.
iii) Phase detector.

MODULE - III

- Q5)** a) Explain the following characteristics of a Digital IC. [8]
i) Current and voltage parameters (any 4)
ii) Figure of merit.
iii) Noise immunity.
iv) Operating speed.
b) Explain the working of a CMOS Inverter [6]
c) Explain the working of 2 input DTL Nand gate. Also Draw the circuit for 3 input modified DTL gate. [6]
- Q6)** a) State the advantages and disadvantages of HTL over DTL. [2]
b) Explain the operation of schottky TTL. How does the use of schottky diode reduce the turn off time to negligible preparation in a TTL circuit. [8]
c) State the advantages and disadvantages of RTL gate. [5]
d) Explain the use of totem pole output stage in a TTL gate. [5]

MODULE - IV

- Q7)** a) Explain a 4bit D/A converter with binary weighted resistors also sketch the graph of output versus input. [8]
b) Calculate the output voltage of a R-2R ladder network given $R_F = 27k\Omega$ when the inputs b_0, b_1, b_2, b_3 are at 5v. [4]
c) Explain the voltage to frequency converter and derive the necessary expressions. [8]
- Q8)** a) Explain successive approximation type A/D converter and list its advantages. [8]
b) Design a 6 bit weighted resistor (DAC) whose full scale output voltage is -10v. The logic levels are logic 1 = +10v and logic 0 = 0v. Calculate the output voltage when input is [8]
i) 101100 ii) 111000
c) Explain the following ADC specification parameters. [4]
i) Resolution ii) Range of input voltage.
iii) Conversion time iv) Accuracy.

