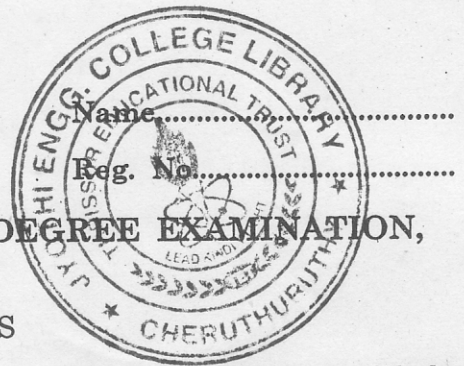C 15283

FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2010

EC 2K—402 PULSE CIRCUITS

Time : Three Hours   Maximum : 100 Marks

Answer **all** *questions*

I. (a) Explain the operation of RC circuit as and differentiator and HPF.

   (b) With circuit and waveforms, explain the operation of transistor switch with capacitor load.

   (c) Give the internal block diagram of 555 timer 1C and explain.

   (d) Differentiate between monostable, astable and bistable circuits.

   (e) Explain phase detection with XOR gate.

   (f) What is time base signal? Explain one method to generate it.

   (g) Explain the principle of sigma delta ADC.

   (h) Explain the possible errors in an ADC operation.

                                              $(8 \times 5 = 40$ marks)

II. (a) Explain the various switching characteristics of a BIT.

Or

   (b) Give the circuit of MOS inverter. Give its characteristics and explain. Compare with BJT switch.

III. (a) Draw the circuit of emitter coupled astable. Explain the operation with waveforms. Also discuss the circuit design considerations.

Or

   (b) Draw monostable circuit with 555 timer. Explain the working, and derive the quasi stable time period.

IV. (a) With block schematic, explain digital PLL. Mention one application.

Or

   (b) Draw the circuit of a simple and Bootstrap sweep. Explain the working and compare.

V. (a) Explain accuracy, resolution, conversion speed, offset error and gain error of DAC. Explain the operation of R-2R ladder DAC.

Or

   (b) Draw the circuit of successive approximation type ADC. Explain the working. List the advantages and limitations.

                                              $(4 \times 15 = 60$ marks)