H-56065 Seat No._____

M. Sc. (Part – II) Examination

April / May – 2003

Physics : Paper–II

(Electronics–I)

Time : **3** Hours] [Total Marks : **100**

Instructions : (1) Attempt **all** questions.
  (2) Symbols and terminology used have their usual meaning.
  (3) All questions carry **equal** marks.

1 (a) Draw internal block diagram of IC 723 and give its important specifications.

  (b) Draw circuit diagram of regulator to generate + 5 volts and output current of 100 mA using IC 723.

OR

1 (a) Explain the different types of protection circuits used in regulated power supplies.

  (b) With the help of circuit diagram show how IC 7805 can be used as constant current source.

2 (a) What is tuned amplifier ? Draw circuit of tuned secondary FET amplifier and explain its working.

  (b) For a pulse explain :
  (1) Rise time
  (2) Pulse width
  (3) Overshoot.

OR

2 (a) Describe principle, construction and working of a dual gate MOSFET.

  (b) Why interfacing is required between TTL and CMOS ? Draw necessary profile windows and explain working of one circuit used for T.T.L to CMOS interfacing.

3 (a) Draw the circuit of floating load type voltage to current converter using OPAMP and explain its working.

(b) Sketch the circuit of active peak detector using OPAMP and explain its operation.

(c) Draw the circuit of 1st order low pass Butterworth filter and explain its frequency response.

Design a low pass filter at a cut off frequency of 1 KHz with a pass band gain of 2.

OR

3 (a) Draw the basic block diagram of phase locked loop (PLL) and explain its operation. Describe the application of PLL in AM detector.

(b) Explain the working of a Digital clock using block diagram.

4 (a) Draw the circuit diagram and explain the working of a dual slope ADC.

(b) What are the advantages and disadvantages of above ADC compared to other types.

OR

4 (a) Draw block diagram and explain the operation of a decade counter.

(b) Explain the difference between binary and biquinary counting.

5 (a) What do you understand by static debugging and dynamic debugging ? List the techniques commonly used in dynamic debugging and discuss each briefly.

(b) A set of ten data bytes are stored in memory locations starting at 6050 H. The data bytes are expected to be positive $\left(<127_{10}\right)$. Write a programme and draw the flow chart to :

(1) Check each data byte weather it is positive or negative

(2) Reject all negative bytes

(3) Add all positive bytes.

(4) Store FFH in the memory location 6070 H– if the sum is exceeds than the eight bits, otherwise store the sum

Data (H) : F2, D8, 9F, 28, C2, 19

2F, 21, 24, 30

(Note :   Hex code in a program is not necessary).

OR

5 (a) List the similarities and differences between two instructions – CALL–RET, PUSH–POP.

(b) Write down the applications of rotate instruction.

(c) Sixteen bytes of data are stored in memory locations starting from 6050H to 605 FH. Write a programme and draw the flow chart to transfer the entire block of data to new memory locations starting at 6070 H.

Data (H) 10, 37, 19, A2, 29, F2, 98, 82, 57,

B8, 5A, A7, 7F, DA, 8B, E5

(Neglect machine code in a programme.)

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