SE SEM-III CBGS IT NOV/DEC-2016

SUB:- ADC

16/12/2016

QP Code :552400

Extra

(3 Hours) **[Total Marks:80**

N.B.: (1) Question No. **1** is **compulsory.**
(2) Solve any **three** questions out of remaining **five.**
(3) Figures to **right** indicate **full** marks.
(4) Assume suitable **data** where **necessary.**

1. Attempt any five out of six questions (20)
   a) What are the various regions that a transistor can operate? In which region can a transistor be operated if it is used as a switch?
   b) Give some applications of OpAmp and explain the block diagram of Op Amp.
   c) Explain the working of LCD.
   d) Minimize the following boolean expression wsing K-map

   $$F(A,B.C,D) = \sum m(0,3,7,11,15) + d(1,2,5)$$

   e) Draw the truth table and excitation table for S-R flip flop.
   f) Convert $(101101.1101)_2$ to decimal, octal and hexa decimal.

2 a) What is the need for biasing? Explain voltage divider bias and locate the Q points (10)
   b) Draw the truth table for full adder and realize using 3:8 decoder (10)

3 a) Explain the working of Monostable Multivibrator using IC555. Draw the waveforms and give its applications (10)
   b) Design and implement one digit BCD adder using IC- 7483. (10)

4 a) Design and implement binary to gray code converter (10)
   b) Realize the following expression using only one 8:1 MUX and few logic gates (05)

   $$F(A,B,C,D)=\sum m(0,3,6,8,11,13,15)$$

   c) Explain the practical differentiator circuit using op-Amp. (05)

5 a) Explain differential amplifier and elaborate on any one method to improve the CMRR (10)
   b) Design a half adder using VHDL (05)
   c) Design mod-3 up counter using JK Flip Flop (05)

6 Write short notes on any four (20)
   a) Bidirectional shift registers
   b) Full subtractor
   c) Basic Logic Gates
   d) BCD and Excess-3 code
   e) JFET