ET-403/DE/4th Sem/2013/M

DIGITAL ELECTRONICS

Full Marks - 70

Pass Marks - 28

Time - Three hours

Answer any five questions

Q1 a) Convert 13.85 from decimal to binary.

b) Convert 257_8 to decimal.

c) Convert 1011.01101_2 to Octal.

d) Convert decimal no 14 to its Excess-3 code form.

e) Find out 1's complement of 0000 and convert it further to its 2's complement.

f) Code -001 and +011 using the signed no system.

g) Convert 34.562_8 to its equivalent binary no.

7x2=14

Q2 a) Add 110011_2 and 101101.01_2

b) Subtract 0101 from 1110.

c) Divide 11001 by 101.

d) Using 2's complement subtract 1010 from 1101.

e) Draw the symbol and also give the truth table for the NOR, X-OR and X-NOR gates.

2x4+6=14

Q3 a) State and explain De-Morgan First and Second Theorem.

b) Simplify the Boolean equation $Y=\bar{A}\bar{B}\bar{C} + \bar{A}B\bar{C} + A\bar{B}\bar{C} + AB\bar{C}$.

8+6=14

Q4 a) Draw the truth table for a Half Adder and realise its logic circuit by using NAND gates only.

b) With the help of the logic circuit of a RS flip-flop and clocked RS flip flop state its major differences.

6+8=14

Q5 Using a neat diagram for a 4 bit serial input shift register (SISO) and explain its working principle. Utilise the help of a clock pulse for your explanation.

14

Q6 a) Explain how a serial shift register may be converted into a ring counter

b) Also explain what you understand by a Data Selector and a Demultiplexer

7+7=14

Q7 Write short notes on any two

i) CMOS

ii) Subtractor

iii) Parity Checker/ Generator

iv) Analog to Digital converter

7x2=14