



IV-B.Tech (Supplementary)

DEC EC 401

(E&EE, E&TC, CSE, IT)

FOURTH SEMESTER EXAMINATION-2010

DIGITAL ELECTRONIC CIRCUITS

[EC 401]

Full Marks: 70

Time: 3 Hours

Answer any SIX questions including Question No.1 which is compulsory.

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable and all parts of a question should be answered at one place only.

1. a) What are the different triggering methods in flip flops? [2½]
b) Draw the connections to implement a D flip flop using JK flip flop. [3]
c) Draw the truth table for a 4 bit priority encoder. [2½]
d) $(1010010)_2 = (?)_8$ [2]
e) Draw the pin diagram of IC 74154. [3]
f) What is a successive approximation type ADC? [3]
g) Draw the state diagram of JK flip flop. [2]
h) $(101101)_2 \times (100101)_2 = (?)_H$ [2]
2. a) Design a BCD subtractor for 4 bit input data. [5]

(1)

- b) Design a Mod-13 asynchronous counter showing the timing diagram. [5]
3. a) Design a decimal to octal decoder. [5]
b) Design a parallel in serial out shift register. [5]
4. a) Design a full adder using 1 to 4 Demultiplexer. [5]
b) Design a 4 bit down counter. [5]
5. a) Design a master-slave JK flip flop and write its advantages and disadvantages. [5]
b) Implement the given expression using 4:1 MUX [5]
- $$f(x_1, x_2, x_3, x_4) = \sum (1, 3, 5, 6, 7, 14)$$
6. a) Design a BCD to 7 segment decoder using IC 7448. [5]
b) Draw a comparative study between different types of memories. [5]
7. a) Design a 8:1 MUX using 2:1 MUX chips showing all the steps. [5]

b) Realise the system in SOP form

[5]

$$f = M_1 \cdot M_3 \cdot M_4 \cdot M_5 \cdot M_9 \cdot M_{10} \cdot M_{11} \cdot M_{13}$$

8. Write short notes on – (any two)

[5 × 2]

- a) Analog to digital converters
- b) Shift register
- c) Priority Encoder

XXXXX

(3)