328414(28)

B. E. (Fourth Semester) Examination, 2020

(Old Scheme)

(AEI, EEE, EI, Et & T Branch)

DIGITAL ELECTRONIC CIRCUITS

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Attempt all questions. Part (a) from each question is compulsory & carries 2 marks each. Attempt any **two** parts from (b), (c) and (d) of each question & carries 7 marks each.*

Unit-I

1. (a) Why and which code is used for labelling the cells of K map?

(b) Assume that the data has been encoded in a 7-bit even parity Hamming code and the number 1011011 is recieved. Find out the bit in error. What will be the corrected code be?

(c) State the method for Binary to Gray & Gray to binary code conversion with suitable example?

(d) State De-Morgan's theorem & prove it?

Unit-II

2. (a) Find and min term for $BC + A$.

(b) Simplify using K-map and implement it with NAND gate :

$$F = \Sigma m(0, 1, 2, 3, 4, 5, 10, 11)$$

(c) Simplify the Boolean function F in the POS form using tabulation method.

$$F(A, B, C, D) = \Sigma(3, 4, 5, 9, 14)$$
$$+ d (7, 13, 15)$$

(d) Explain Quine-Mcclusky Method in detail with suitable example?

Unit-III

3. (a) What is PAL and PLA?

(b) Design a 4-bit BCD adder circuit?

(c) Construct a 4×16 decoder using 3×8 decoder?

(d) Explain how multiplexer is used as universal function generator?

Unit-IV

4. (a) What is Sequential circuit?

(b) Design J-K flip flop using S-R flip-flop?

(c) Draw and explain working of parallel in serial out (PISO) register. Explain how a number can be shifted in and out from such a register?

(d) Design a synchronous Decode counter?

Unit-V

5. (a) What is tristate logic?

(b) Give comparison among various logic families.

(c) Define following parameter's :

(i) Current and voltage

(ii) Noise Margin

(ii) Propogation delay

(iii) Power dissipation

(iv) Speed power product

(d) Explain TTL in detail.