

**B033315(033)**

**B. Tech. (Third Semester) Examination,  
Nov.-Dec. 2020**

**DIGITAL ELECTRONICS**

*Time Allowed : Three hours*

*Maximum Marks : ~~80~~ 100*

*Note : Attempt all questions. Each question carries equal marks. Part (a) is compulsory and answer any two from (b), (c) and (d).*

**Unit-I**

1. (a) Find the 9's complement of : 24

(i) 3465

(ii) 782.54

(b) Perform the following decimal addition in 8421 code : 78

$$679.6 + 536.8$$

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- (c) Write short notes on : 78
- (i) XS-3 code
  - (ii) Cyclic code
  - (iii) Gray code
  - (iv) 8421 code
- (d) Using Quine Mc-cluskey simplyfy the following : 78
- $$F(A, B, C, D) = \sum m(0, 1, 3, 7, 8, 9, 11, 15)$$

### Unit-II

2. (a) Define Half adder. 24
- (b) Implement a 16 : 1 multiplexer using 4 : 1 multiplexer. 78
- (c) Design a carry look ahead adder. 78
- (d) Design a full subtractor. 78

### Unit-III

3. (a) Define sequential circuit. 24
- (b) Explain the working of Bi-directional shift register with logic diagram. 78
- (c) Explain the race around condition for J-K flip flop. How can it be avoided in master-slave flip-flop? 78

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- (d) Draw and explain the working of 3 bit UP synchronous counter. 78

### Unit-IV

4. (a) Define flip-flop. 24
- (b) Differentiate between Moore and Mealy machines. 78
- (c) Convert JK flip-flop to D flip-flop. 78
- (d) Convert SR flip-flop to T flip-flop. 78

### Unit-V

5. (a) Define Memory. 24
- (b) Draw and explain Nand gate totem pole TTL. 78
- (c) Implement the following function using PLA : 78
- $$F(A, B, C, D) = AC' + A'B'C' + ABCD$$
- (d) Explain briefly ROM organization. 78