

Electronics and Communication Engineering Department
National Institute of Technology Kurukshetra

Digital Design ECPC34 (1st Sessional ; 20.09.2020; 2:30pm to 3:20pm)

Time: 50 minutes.

Marks :30

- (c) Using the following Boolean equations, to determine 12 functions, that include 8 arithmetic functions and 4 logic operations. [15]
- (d) Use two full adders, one full adder for 8 arithmetic operations and other full adder for 4 logic operations obtained in part(a) above, to design i th slice of ALU. Full adder has 2 inputs X_i , Y_i , and Z_i is carry input. A_i , B_i are external inputs and C_i is input carry. S_2 , S_1 , S_0 are selection variables. [15]

$$X_i = A_i + S_2 \bar{S}_1 \bar{S}_0 B_i + S_2 S_1 \bar{S}_0 \bar{B}_i, \quad Y_i = S_0 B_i + S_1 \bar{B}_i, \quad Z_i = \bar{S}_2 C_i$$