Reg. No. : | | | | | | | | | | |

Question Paper Code: 33506

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Third Semester

Electronics and Instrumentation Engineering

01UEI306 – DIGITAL ELECTRONICS

(Regulation 2013)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Convert the octal number 360.15 to decimal number.

2. Determine the XS3 equivalent of the following decimal number
    (a) 345   (b) 698.

3. Suggest a solution to overcome the limitation on the speed of the adder.

4. Implement the given function using NAND gates $F(x, y, z) = \sum m(0, 6)$.

5. How a D flipflop is converted into T flipflop.

6. Differentiate between edge triggering and level triggering.

7. Differentiate fundamental mode and pulse mode asynchronous sequential circuits.

8. What is race conditions?

9. Define address and word.

10. Why the input variables to a PAL are buffered?

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Define the laws of Absorption.   (2)

    (ii) Simplify the logic function $F(A,B,C,D) = \prod(3, 5, 6, 11, 13, 14, 15)$ using
         K - map in SOP and POS form.   (14)

(b) Given Y (A, B, C, D) = $\prod M$ (0, 1, 3, 5, 6, 7, 10, 14, 15), draw the K-map and obtain the simplified expression and realize using basic gates (16)

12. (a) (i) Analyse the function with a multiplexer F $(A, B, C, D) = \Sigma$ (0, 1, 3, 4, 8, 9, 15) (8)

 (ii) Draw and explain the working of a carry look ahead adder. (8)

Or

(b) Design a BCD to Excess-3 converter using truth table and k-map simplification. (16)

13. (a) Design a sequence detector to detect the sequence "01110" using D Flipflops (one bit overlapping). (16)

Or

(b) Design a 3-bit synchronous counter which counts in the sequence 000, 001, 011, 010,100, 110, (repeat) 000 using D flip flop. (16)

14. (a) Design a asynchronous sequential circuit specified by the following flow table. (16)

	00	01	10	10
A	A.0	A.0	A.0	B.0
B	A,0	A.0	B.1	B.1

Or

(b) Design a asynchronous circuits that will produce output only the first pulse received and ignore if any other pulses. (16)

15. (a) Implement the BCD to XS3 code conversion using ROM. (16)

Or

(b) (i) Draw the block diagram of a PLA and explain its architecture. (6)

 (ii) Design a 2 bit comparator using PLA. (10)

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