



UTTARAKHAND OPEN UNIVERSITY, HALDWANI (NAINITAL)  
उत्तराखण्ड मुक्त विश्वविद्यालय, हल्द्वानी (नैनीताल)

PGDCA 1<sup>ST</sup> YEAR 1<sup>ST</sup> SEMESTER ASSIGNMENT

*Last Date of Submission: 15/01/2016*

**Course Title: Digital Logic**

**Course Code: PGDCA-02**

**Year: 2015-16**

**Maximum Marks: 40**

Section 'A' contains 08 short answer type questions of 5 marks each. Learners are required to answers 4 questions only. Answers of short answer-type questions must be restricted to 250 words approximately.

1. Convert  $(643)_{10}$  into its Excess-3 code and  $(10110)_2$  to gray code.
2. Verify the following operation are commutative but not associative (a) NAND (b) NOR.
3. Convert the following to its decimal equivalent:  
(a)  $(81B6.F)_{16}$   
(b)  $(765.45)_8$
4. What is multiplexer?
5. Explain how does the AND multiplication differs from ordinary multiplication and OR addition differs from ordinary addition method.
6. Distinguish between combinational circuit and sequential circuit.
7. What are the differences between asynchronous and synchronous counter?
8. What are flip-flops? Explain the types of flip-flops.

Section 'B' contains 04 long answer-type questions of 10 marks each. Learners are required to answers 02 questions only.

1. Draw and explain the operation of a Binary to Gray code convertor.
2. Simplify the following Boolean function and obtain (a) minimal sum of product and (b) minimal product of sums  $Y = \sum_m (0,2,3,6,7) + E_d(8,10,11,15)$
3. Explain the operation of 2-input XOR gate and realize it using NAND/NOR gates.

4. What is shift register? Name different types of shift registers. Describe the parallel in parallel out shift register in detail.

