

B.Sc.- I (Information Technology) (CBCS Pattern) Semester-I  
**UBITT105.1 - Elective-I - Paper-V - Digital Electronics**

P. Pages : 2

Time : Three Hours



**GUG/W/24/10915**

Max. Marks : 80

- Notes :
1. All questions are compulsory and carry equal marks.
  2. Draw neat and labelled diagram and use supporting data wherever necessary.
  3. Avoid vague answers and write specific answer related to question.

**Either:**

1. a) Describe number system in brief solve the following 8
- i)  $(245)_8 = (?)_{16}$  ii)  $(0.47)_{10} = (?)_2$
- b) Explain Alphanumeric code with their Advantages and disadvantages. 8

**OR**

- c) Give a short note on data Representation & Explain Negative number representation with suitable example. 8
- d) What is Excess-3 code? Perform the excess-3 code addition 8
- i)  $4+3$  ii)  $14+43$

**Either:**

2. a) Perform the following. 8
- i)  $(10101)_2 \times (101)_2$  ii)  $(1000)_2 \div (10)_2$
- iii)  $(001010)_2 + (10010)_2$  iv)  $(01110)_2 - (10110)_2$
- b) What is 10's complement? Solve the following by using 10's complement method 8
- i)  $41 - 32$  ii)  $24 - 14$

**OR**

- c) Give symbolic representation and truth table of following 8
- i) Nand gate ii) Ex-OR gate
- ii) Not gate iv) NOR gate
- d) What is mean by real number representation explain in brief. 8

**Either:**

3. a) Solve the following using DeMorgan's theorem and Draw equivalent circuit 8
- i)  $y = \overline{(A+B)} \cdot \overline{(A+B)}$  ii)  $y = \overline{(A \cdot B)} + \overline{(A \cdot B)}$
- b) What do you mean by Combinational Circuits? Explain full adder in brief. 8

**OR**

- c) What is multiplexer? Explain 8 : 1 mux by using two 4 : 1 mux. 8
- d) Explain the following Laws of Boolean algebra's.
- i) Distributive Law ii) Commutative Law

**Either:**

4. a) Explain Ring Counter with the help of logical diagram & give its truth table. 8
- b) What is flip-flops? Explain construction and working of RSFF. 8

**OR**

- c) Describe Ripple Counter? Explain 4-bit Ripple Counter with their timing diagram. 8
- d) Explain construction and working of SISO Register with timing diagram. 8

5. Solve all the questions.

- a) What is parity code? Give its advantages and disadvantages. 4
- b) Explain 1<sup>s</sup> Complement method of subtraction with suitable example. 4
- c) Differentiate between Encoder and decoder. 4
- d) Explain Race Around Condition in JK flip Flop? 4

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