

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

Time : Three Hours



**GUG/S/23/10915**

Max. Marks : 80

- Notes :
1. All Questions are compulsory and carry equal marks.
  2. Draw neat and labelled diagrams wherever necessary.
  3. Avoid vague answers and write answers relevant and specific to questions only.

**Either:**

1. a) Explain in detail about BCD code? Explain why BCD code is called as weighted code. 8
- b) Write down steps to convert binary number system to decimal Number system. 8
  - i)  $(1011101)_2 = (?)_{10}$
  - ii)  $(1011011)_2 = (?)_{10}$

**OR**

- |    |                                  |                                 |                |              |          |
|----|----------------------------------|---------------------------------|----------------|--------------|----------|
| c) | Write Note on.                   |                                 |                |              | <b>8</b> |
|    | i) Range                         | ii) accuracy                    | iii) underflow | iv) overflow |          |
| d) | Perform the following conversion |                                 |                |              | <b>8</b> |
|    | i) $(234.5)_8 = (?)_2$           | ii) $(FFFF)_{16} = (?)_{10}$    |                |              |          |
|    | iii) $(111.10)_{10} = (?)_2$     | iv) $(457.19)_{10} = (?)_{BCD}$ |                |              |          |

**Either:**

2. a) What is parity code? Explain its types. 8
- b) Explain the methods of 9's complement subtraction. 8

**OR**

- c) Explain the binary subtraction using 1's complement with examples. **8**
- d) Explain why NAND and NOR gate called as a universal gate. **8**

**Either:**

3. a) What is full Adder? Explain block diagram and truth table. 8
- b) State and prove De-Morgan's Theorem. 8

**OR**

- |    |  |                                |          |
|----|--|--------------------------------|----------|
| c) | Explain the term:                              |                                | <b>8</b> |
|    | i) SOP   | ii) POS with suitable examples |          |
| d) | Explain in detail the laws of Boolean algebra. |                                | <b>8</b> |

**Either:**

4. a) Draw a block diagram of 3-bit ripple counter and explain its construction and working. 8
- b) What is Ring Counter? Explain in detail. 8

**OR**

- c) What is T-FF? Explain its construction and working? 8
- d) Explain the construction and working of clocked RSFF. 8
5. Attempt **all** the questions.
- a) Explain in brief Real Number Representation. 4
- b) Perform following: 4
- i)  $(11101)_2 + (1111)_2$
- ii)  $(1010)_2 + (1011)_2$
- c) Write a short note on encoder and decoder. 4
- d) Explain D-Flip-Flop in detail. 4

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