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

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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 answer and write specific answer related to question.

Either:

1. a) What is Number system? Explain positional number system in detail. **8**

b) Write the steps to convert Hexadecimal number into octal number system with suitable example. **8**

OR

c) What is Binary codes? Explain unweighted binary code in detail. **8**

d) Explain in short write Real number representation **8**
i) Range   ii) Accuracy
iii) Overflow   iv) Underflow

Either:

2. a) Give the construction of Ex-OR gate by using Nand gates. **8**

b) Give the steps and example for decimal substraction using 10's compliment form. **8**

OR

c) Perform the following. **8**

i) $(10101)_2 - (01011)_2$ ii) $(0100)_2 - (1011)_2$

iii) $(1110)_2 + (1010)_2$ iv) $(1111)_2 + (1101)_2$

d) Explain the properties and symbolic representation of Basic gates. **8**

Either:

3. a) What is Half adder? Explain. **8**

b) State and prove DeMorgan's Theorem. **8**

OR

c) What is multiplexer? Explain 8:1 mux by using 4:1 mux. **8**

d) Minimize the following function using R-map.   **8**
  i) $F(A, B, C, D) = \Sigma m(0, 1, 3, 5, 6, 9, 11, 13, 15)$
  ii) $F(A, B, C) = \pi M(3, 5, 6, 7)$

Either:

4. a) What do you mean by sequential circuit? Explain RSFF in detail.   **8**

b) Give the construction and working of 4-bit Ripple counter.   **8**

OR

c) What is flip-flop? Explain construction and working of JKFF.   **8**

d) Explain following.   **8**
  i) Ring Counter
  ii) Jonhson Counter.

5. Solve all the questions.

a) Explain EBCDIC code in brief.   **4**

b) Write a short note on Binary addition.   **4**

c) Explain 4-bit Adder subtractor circuit in detail.   **4**

d) What is counter? Explain 4-bit up counter.   **4**

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