

B.C.A.- I (CBCS Pattern) Semester-I  
**UBCAT105.1 - Elective-I Paper- V - Digital Electronics**

P. Pages : 2

Time : Three Hours



**GUG/S/25/11747**

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 questions.

**Either:**

1. a) What is number system? Explain steps for converting Octal to Hexadecimal number with suitable example. 8
- b) Describe in brief about binary codes & explain unweighted code in detail. 8

**OR**

- c) Perform the following 8
- i)  $(10101110)_{10} = (?)_8$                       ii)  $(205.20)_{10} = (?)_2$
- iii)  $(100010)_2 = (?)_{\text{gray}}$                       iv)  $(1CD4)_{16} = (?)_8$
- d) What do you mean by Data Representation. Explain Positive and Negative Representation in brief. 8

**Either:**

2. a) Describe  $1^S$  and  $2^S$  compliment method of subtraction with suitable example. 8
- b) Give the symbolic representation & Truth Table of Basic gate. 8

**OR**

- c) Why Nand and NOR gates are called as Universal gate? Explain Basic gate by using Nand gate. 8
- d) Explain Decimal subtraction method using  $9^S$  and  $10^S$  compliment with suitable example. 8

**Either:**

3. a) State and Prove De Morgan's Theorem for three Variable. 8
- b) What is multiplexer? Explain 8:1 mux by using 4:1 mux. 8

**OR**

- c) What do you mean by Adder ckt? Explain 4-bit binary Adder/subtractor circuit. 8
- d) Explain Laws and Identities of Boolean Algebra. 8

**Either:**

- |           |    |  |          |
|-----------|----|--|----------|
| <b>4.</b> | a) | What is sequential circuit? Explain working of clocked RSFF with timing diagram. | <b>8</b> |
|           | b) | Differentiate between Asynchronous and synchronous counter.                      | <b>8</b> |

**OR**

- |           |    |   |          |
|-----------|----|---|----------|
|           | c) | Give the construction and working of 4-bit up counter.          | <b>8</b> |
|           | d) | What is flipflops? Explain JKMS flip flops with timing diagram. | <b>8</b> |
| <b>5.</b> |    | Solve all the questions.  |          |
|           | a) | Explain BCD code in detail.                                     | <b>4</b> |
|           | b) | Explain Binary Addition with suitable example.                  | <b>4</b> |
|           | c) | Write short note on Encoder and Decoder.                        | <b>4</b> |
|           | d) | Draw symbolic representation of D and T flipflop.               | <b>4</b> |

\*\*\*\*\*