

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

P. Pages : 2

Time : Three Hours



**GUG/W/23/10915 (S)**

Max. Marks : 80

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

**Either:**

1. a) Explain the following codes: 8
  - i) Excess-3 code.
  - ii) BCD code
- b) Perform following conversion 8
  - i)  $(342.42)_8 = (?)_2$
  - ii)  $(74)_{10} = (?)_{16}$

**OR**

- c) What is gray code? Explain convert the following binary number to gray code 8
  - i) 11001
  - ii) 10111
- d) What is number system? Explain in detail. 8

**Either:**

2. a) Explain the properties and symbolic representation of NOT, NAND, Ex-OR and Ex-NOR gate. 8
- b) Explain Binary subtraction method using 2's complement with suitable example. 8

**OR**

- c) Why Nand and NOR gates are called as universal gate? Explain Ex-NOR gate by using Nand gates. 8
- d) Give the truth table for 8
  - i) Ex-NOR
  - ii) AND
  - iii) NOT
  - iv) OR

**Either:**

3. a) State and prove Boolean Laws in detail. 8
- b) Explain: 8
- i) Multiplexer
- ii) Encoder

**OR**

- c) State and prove DeMorgan's Theorem for 3-variable. 8
- d) What is K-map? Explain K-map for 3 variable. 8

**Either:**

4. a) Explain the working of SRFF in detail. 8
- b) What is sequential circuit? Explain D-FF in detail. 8

**OR**

- c) Differentiate between synchronous and Asynchronous counter. 8
- d) Explain the construction and working of 4-bit up counter with timing diagram. 8

5. Solve all the questions.
- a) Explain ASCII code in detail. 4
- b) What is mean by Adder? Explain Half adder in detail. 4
- c) Explain Demultiplexer in detail. 4
- d) Explain Encoder circuit in detail. 4

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