

B.Sc. (I.T.)- I (CBCS Pattern)-Regular-Semester 2017 Sem I
UBITT105.1 - Elective-I : Paper-V : Digital Electronics

P. Pages : 2

GUG/S/18/10072

Time : Three Hours



Max. Marks : 80

- Notes :
1. All questions are compulsory and carry equal marks.
 2. Draw a neat and labelled diagram wherever necessary.
 3. Avoid vogue answers.

1. Either

- a) Explain the following codes; **8**
i) Excess 3-code, and ii) Parity code
- b) Perform following conversion (Show calculation) **8**
i) $(342.42)_8 = (---)_2$
ii) $(74)_{10} = (---)_{16}$
iii) $(43.2)_{10} = (---)_{16}$
iv) $(1011.10)_2 = (---)_8$

OR

- c) Describe binary number system. Write down method for conversion of Conversion of **8**
Decimal numbers to binary Number.
- d) What is Gray code? Explain. **8**
Convert the following binary number to gray code
i) 110011 ii) 11110

2. Either

- a) Explain the properties and symbolic representation of NOT, AND. **8**
- b) Explain decimal subtraction method using 9's (Nimes) and 10's (Tens) complement with **8**
suitable example.

OR

- c) Why NAND and NOR gates are called as universal building blocks? Explain. **8**
Also Explain EX-OR gate using NOR gates.
- d) Explain 1's and 2's complement method for subtraction of binary numbers with suitable **8**
examples.
Do as directed.
i) $(10101010)_2 = ()_{16}$ ii) $(22)_{10} = ()_2$

3. Either

- a) What is Half Adder? State it's limitations. Explain the operation of 4-bit 2's complement **8**
Adder/ subtractor with diagram.
- b) State and Prove De-Morgan's theorem. State Duality theorem and find the dual of **8**
 $A.B + A.C = A.(B+C)$.

OR

- c) What are decoder and encoder? Draw the logic diagram of 3-line to 8-line decoder and explain its working. **8**
- d) What is K-map? What are its advantages? Explain the different terms associated with K-map. **8**

4. Either

- a) What is T-FF? Construct T-FF using logic gates and explain its working. **8**
- b) What is Up-Down counter? Explain the construction and working of 4-bit down counter with timing diagram. **8**

OR

- c) What is shift Register? State its importance. **8**
- d) What is flip-flop?
Explain construction and working of JKFF. **8**

5. Solve all questions.

- a) Explain EBCDIC codes in brief. **4**
- b) What is Truth – Table ? Explain with example. **4**
- c) Explain multiplexer in detail. **4**
- d) What is Race condition in JKFF? Explain. **4**
