

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

P. Pages : 2

Time : Three Hours



GUG/W/22/10915

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) Perform following conversions (show Calculation) 8
- i) $(228.35)_8 = (---)_2$ ii) $(74)_{10} = (---)_{16}$
- iii) $(38.2)_{10} = (---)_{16}$ iv) $(1011.10)_2 = (---)_8$
- b) Explain the following code 8
- i) BCD
- ii) Excess 3

OR

- c) What is Hexadecimal Number System? Write the steps for conversion of Decimal Number into its equivalent Hexadecimal Number. 8
- d) Explain the Positive and Negative data representation of an 8-bit binary number. 8

Either:

2. a) Explain the Properties and Symbolic representation of NOT, AND Gate. 8
- b) What is 9's complement? Explain the decimal subtraction using 9's complement with example. 8

OR

- c) Explain Binary Subtraction with example. 8
- d) What is 1's and 2's complement? Give one example of each. Perform the following subtraction using 1's and 2's complement method $(10110)_2 - (0110)_2$. 8

Either:

3. a) What is half and full subtractor? Write it's Boolean equation and truth table. Also draw their logic diagram. 8
- b) State and Prove De-Morgan's theorem. State Duality theorem and find the dual of $A.B + A.C = A.(B+C)$. 8

OR

- c) What is K-map? Explain SOP and POS in K-map with suitable example. 8
- d) Explain following in detail 8
 - i) Multiplexer
 - ii) Full Adder.

Either:

- 4. a) What is flip-flop? Explain the construction and working of JKFF. Draw its timing diagram. 8
- b) What is shift Register? State its importance. 8

OR

- c) Discuss the working of JKMSFF. 8
- d) What is UP/DOWN counter? Explain the construction and working of 4-bit. Down counter with timing diagram. 8

5. Attempt all the questions.

- a) Explain ASCII Code in brief. 4
- b) Explain the following 4
 - i) EX – OR gate
 - ii) EX – NOR gate
- c) Explain multiplexer in detail. 4
- d) Explain Ring counter in brief. 4
