

B.C.A. - I (NEP Pattern) Semester-I
CC102 Core Paper-II - Basic of Computer Architecture

P. Pages : 2

Time : Three Hours



GUG/W/24/16188

Max. Marks : 60

- Notes :
1. All questions are compulsory and carry equal marks.
 2. Draw neat labelled diagram wherever necessary.
 3. Avoid vague answers and write answer relevant and specific to questions.

Either :

1. a) Explain positional number system & solve the following. 6
- i) $(127)_8 = (?)_{10}$
- ii) $(1E4)_{16} = (?)_8$
- b) What is Gray code? Write the procedure to convert Gray to binary code with suitable example. 6

OR

- c) What is data Representation? Explain positive data pre-presentation with suitable example. 6
- d) Solve the following 6
- i) $(1456)_{10} = (?)_{BCD}$
- ii) $(1011011)_2 = (?)_{10}$

Either :

2. a) Explain Binary subtraction method using 1^s compliment form with suitable example. 6
- b) Explain the following 6
- i) NAND gate
- ii) NOR gate
- iii) Ex-NOR gate

OR

- c) Perform the following 6
- i) $(10110)_2 \times (101)_2$
- ii) $(01011)_2 - (10100)_2$
- d) Realize the Ex-OR and Ex-NOR gate by using NOR gate. 6

Either :

3. a) Reduce the following expression using Boolean law's and theorems. 6
- 1) $y = A + \bar{B} \cdot \bar{C} + (A + B) \cdot C$
- 2) $y = (A + B) \cdot (A + \bar{B}) \cdot (\bar{A} + B)$
- b) Explain the following 6
- i) Associative Law
- ii) Distributive Law
- OR**
- c) What is combinational circuits? Explain working of 4-bit binary adder circuit. 6
- d) What is Karnaugh map? Explain how to map k-map for 2 variable. 6
- Either :**
4. a) What do you mean by Sequential circuit? Explain 3-bit ripple counter. 6
- b) Explain the clocked RS-Flip Flops with their timing diagram. 6
- OR**
- c) Draw and explain SISO shift register. 6
- d) Differentiate between Asynchronous and synchronous counters. 6
5. Attempt all the questions below
- a) Write a short note on EBCDIC code. 3
- b) Explain the following 3
- i) AND gate
- ii) NOT gate
- iii) OR gate
- c) Explain Demultiplexer in detail. 3
- d) Explain Ring counter in brief. 3
