

Question Paper Code : 31051

B.Sc. (Semester-I) (NEP) Examination, 2021

(Major/Minor)

COMPUTER SCIENCE

[Paper : First]

(Computer Fundamentals)

Time : Three Hours]

[Maximum Marks : 75

Note: Answer **any five** questions. Each question carries **equal** marks.

1. What is "Generation" in computer terminology? List various computer generations along with key characteristics of computers of each generation. [15]
2. (a) List and explain some important characteristics of a computer. Also explain its limitations. [7]
(b) Differentiate between analog, digital and hybrid computers. Classify computers on basis of its sizes. [8]

3. (a) Differentiate between compiler, interpreter and assembler. [7]
(b) Explain the terms Flowchart, Pseudocode and Algorithm [8]
4. Convert the following : [15]
(a) $101110_2 = ?_8$
(b) $11010011_2 = ?_{16}$
(c) $2A3B_{16} = ?_{10}$
(d) $(562)_8 = ?_2$
(e) $(11010)_{10} = ?_2$
(f) $(209)_{10} = ?_4$
(g) $(545)_{16} = ?_4$
5. (a) Add binary numbers 1010110 and 1011010. [15]
(b) Subtract 01010_2 and 10000_2
(c) Multiply binary numbers 1100 and 1010
(d) What do you understand by 2's complement? Explain with example.

6. (a) Why NAND gate is called universal gate? Explain with giving suitable example. How to convert XOR from NAND gate explain. [7]

(b) Prepare truth tables for following Boolean expressions : [8]

(i) $A \cdot B + \bar{A} \cdot B$

(ii) $A \cdot \bar{B} \cdot C + \bar{B} \cdot \bar{C}$

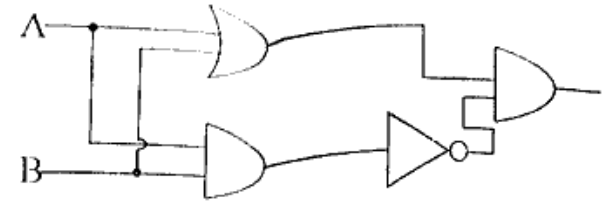
(iii) $\bar{A} + \bar{B} + C$

7. (a) What is Boolean Algebra? Explain with example. State all Boolean Laws. [7]

(b) State and prove the two basic De Morgan's theorems. <https://www.lucknowstudy.com>

8. (a) What is the purpose of Karnaugh Map? Explain with example. [7]

(b) Differentiate between sequential logic and combinational logic. What will be the outputs of following logic circuit? [8]



9. (a) Write the classification of memory. [8]

(b) Define virtual memory. How it is different from cache memory? [7]

10. (a) What is Disk Operating System? Discuss its disadvantages. [7]

(b) What is the difference between internal and external DOS command.? Mention 5 internal and 5 external commands and its syntax. [8]

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