

FIRST SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2014**(CUCBCSS—U.G.)**

Complementary Course—Computer Science

BCS 1C 01—COMPUTER FUNDAMENTALS

Time : Three Hours

Maximum : 64 Marks

Part A*Answer **all** questions. Each question carries 1 mark.*

1. What is the binary equivalent of the decimal number 105 ?
2. Differentiate between BCD and EBCDIC.
3. What is a logic gate ? Name the three basic logic gates.
4. Find the complement of the Boolean function $x \cdot y \cdot z + x \cdot y \cdot z$.
5. Prove that $x \cdot (x + y) = x$.
6. What do you mean by an instruction set of a computer ?
7. List any two secondary storage devices which do not use any mechanical component for its operation.
8. What are the specifications to be considered for comparing two monitors ?
9. List various symbols used for drawing flowcharts.

(9 x 1 = 9 marks)**Part B***Answer **all** questions. Each question carries 2 marks.*

10. Subtract $(011011)_2$ from $(110111)_2$ using 1's complement method.
11. Using the laws of Boolean algebra, prove that $A + AB = A + B$.
12. Differentiate between RAM and ROM.
13. How **barcode** reader recognize the **barcodes**.
14. Draw a flow chart to find the average of 10 numbers.

(5 x 2 = 10 marks)**Turn over**

Part C

*Answer any **five** questions. Each question carries 5 marks.*

15. What are the advantages of using ASCII code compared to EBCDIC ?
16. Draw the simplified logic diagram using only NAND gates to implement the three input Boolean function $F(A, B, C) = \sum(0, 1, 2, 5)$.
17. Explain how cache memory helps in improving the speed of a computer ?
18. What are the factors affecting the disk access time ? Explain.
19. Simplify the Boolean function $F(A, B, C, D) = \sum(0, 1, 2, 4, 5, 7, 11, 15)$.
20. Encode the four bit data word 0101 using Hamming code.
21. Design the full adder combinational circuit.
22. Explain about various control devices.

(5 x 5 = 25 marks)

Part D

*Answer any **two** questions. Each question carries 10 marks.*

23. With the help of a block diagram, explain the working of the control unit of a computer system.
24. Write short notes on :
 - (a) Commonly used output devices.
 - (b) **MIDI instruments.**
25. **Briefly explain :**
 - (a) Universal NAND and **NOR gates.**
 - (b) **Various units used to measure the memory capacity of a computer.**

(2 x 10 = 20 marks)