**SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN (AUTONOMOUS)**
**(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)**
**Chromepet, Chennai — 600 044.**
**B.Sc. END SEMESTER EXAMINATIONS APRIL-2022**
**SEMESTER - I**
**21UCSCT1002 - Digital Computer Fundamentals and Architecture**

**Total Duration : 3 Hrs.** **Total Marks : 60**

## Section A

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Convert the given binary number to Octal number, Hexa decimal and Decimal numbers :$(101011)_2$ to ( ? )$_8$, ( ? )$_{16}$ and ( ? )$_{10}$
2. Explain 1's complement and 2's complement with an example.
3. Show that ABC + ABC' + AB'C + A'BC = AB + AC + BC
4. Sketch 1-to-4 Demultiplexer circuit with truth table and explain its working principles
5. State and explain various shift micro-operations.
6. Apply integer addition algorithm to perform addition of two integer numbers.
7. Describe bus and memory transfer.
8. Explain the significance of Cache Memory.

## Section B

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. Interpret that NAND and NOR gates are universal gates – Justify your answer.
10. Sketch JK flip-flop circuit diagram and explain its working principles.
11. Classify various instruction formats and elucidate with an example.
12. Classify different addressing modes that are used in instruction formats.
13. DMA by pass the CPU to speed up the memory operations – Justify your answer.

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