# GALGOTIAS UNIVERSITY

# School of Computing Science and Engineering
**Bachelor of Computer Applications**
**Mid Term Examination - Nov 2023**

**Duration : 90 Minutes**
**Max Marks : 50**

### Sem I - E1UA103T - Computer System Organisation

*General Instructions*
*Answer to the specific question asked*
*Draw neat, labelled diagrams wherever necessary*
*Approved data hand books are allowed subject to verification by the Invigilator*

**1)** Find (1001101 - 10101001) using 1's complement? — K2 (2)

**2)** Find b's and (b-1)'s complements of given numbers (15956)b, where b=10 and 16. — K1 (3)

**3)** Discuss three representations of Signed integers with suitable examples. — K2 (4)

**4)** In a system with multiple devices requiring communication, evaluate the suitability of two bus arbitration schemes: polling and daisy chaining. Highlight the advantages and disadvantages of each in the context of managing device interactions efficiently. — K2 (6)

**5)** Simplify the following boolean function using K-map and also draw the simplified logic circuit using basic gates. F(ABCD) = Σ m (0,1,5,6,12,13,14) + d(2,4) — K3 (6)

**6)** Discuss the theoretical foundations, types, and practical applications of encoders and decoders in digital systems. — K3 (9)

**7)** Draw logic diagram of NOT,OR,AND and XOR gate using NAND gate and proof it using Boolean equation and truth table. — K4 (8)

**8)** What do you mean by Addressing modes? Explain the following addressing modes with suitable example: i) Index Addressing mode ii) Immediate Addressing mode iii) Relative Addressing mode iv) Direct Addressing mode — K4 (12)

**OR**

As a designer, craft a streamlined bus system for an advanced electronic device: a) Draft a brief block diagram spotlighting vital components and their interconnections, focusing on essentials for efficient communication. b) Detail how this system ensures smooth data transfer among components. Highlight specific roles and the overall advantages, showcasing the design's prowess in enhancing device functionality. — K4 (12)