**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Id: \_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **Subtract the following two BCD numbers (0110 0101 0000 and 0011 0010 0000)(4 marks)**

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1. **Simplify the following function as SoP using tabular method: F(A,B,C)=∑m(0,2,4)+d(3,6,7) (3 marks)**

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1. **Simplify using k-map as SoP,**

**F(A,B,C,D,E)= +**

**Then draw the logic diagram of the simplified function. (5 marks)**

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1. **Design a combinational circuit with 4-bit input number ABCD and produces an output F. The output F of the circuit is to be 1 if and only if the inputs represent a number that is completely divisible by 3 or 7. Note that the inputs (0000 and 1011) can't be received. Derive the simplified expression for output F as SoP. (4 marks)**

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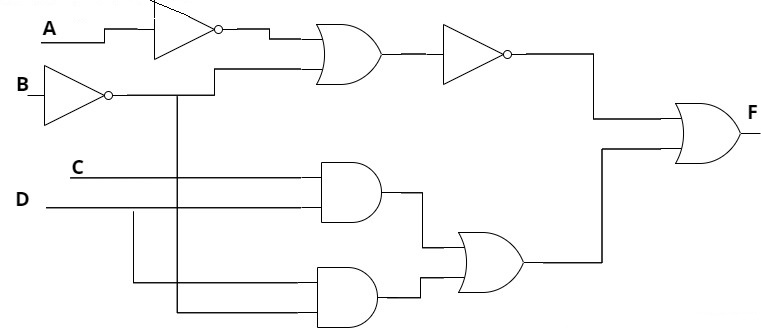
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1. **Calculate the propagation delay of the following logic diagram (3 marks)**

**Knowing the propagation delay of the following gates: NOT gate=3nsec AND gate & OR gate=10 nsec NAND gate & NOR gate=13 nsec XOR gate=20nsec XNOR gate=23 nsec**

**Then Draw the logic diagram of the following Boolean functions using NANDs only.**

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1. **Determine the decimal representation of (011101001010010100101 )5421 (1 mark)**

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