

**Tema: Sinteza decodificatoarelor şi codificatoarelor**

**Scopul lucrării:**studierea practică a structurii şi a metodelor de sinteză a decodificatoarelor şi codificatoarelor.

Tema pentru acasă

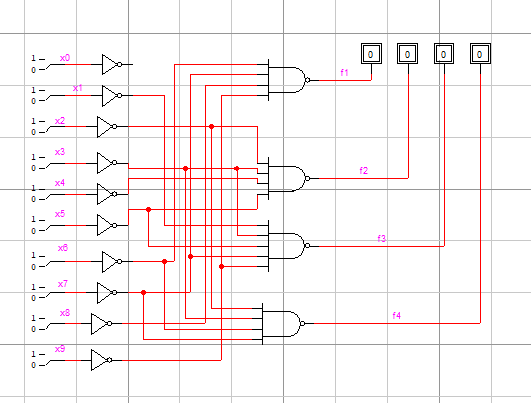
1.   Efectuaţi sinteza unui decodificator binar-zecimal pe 7 segmente conform variantei din tabelul 2.6 ( la indicaţia profesorului).

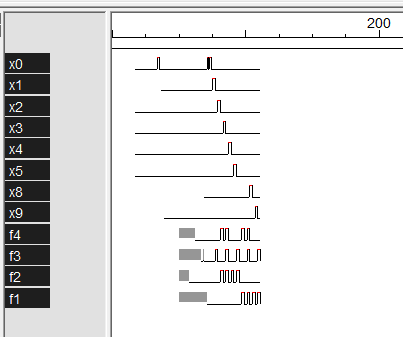
2.   Efectuaţi sinteza unui codificator binar-zecimal conform variantei din tabelul 2.6 (la indicaţia profesorului).

Codificarea:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cifra  zecimala | Intrare | | | | | | | | | | iesire | | | |
| 8 | 4 | 1 | -2 |
| X0 | X1 | X2 | X3 | X4 | X5 | X6 | X7 | X8 | X9 | F1 | F2 | F3 | F4 |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 |

Realizam chema:





Decodificator

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cifra  Zeci-  mala | codul | | | | DC 7 Segmente | | | | | | |
| 5 | 2 | 2 | -1 |
| X1 | X2 | X3 | X4 | a | b | c | d | e | f | g |
| 0(0) | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| 1(3) | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 2(2) | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| 3(7) | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| 4(6) | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| 5(8) | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| 6(13) | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| 7(12) | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| 8(15) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 9(14) | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| 10 | 0 | 0 | 0 | 1 | \* | \* | \* | \* | \* | \* | \* |
| 11 | 0 | 1 | 0 | 0 | \* | \* | \* | \* | \* | \* | \* |
| 12 | 0 | 1 | 0 | 1 | \* | \* | \* | \* | \* | \* | \* |
| 13 | 1 | 0 | 0 | 1 | \* | \* | \* | \* | \* | \* | \* |
| 14 | 1 | 0 | 1 | 0 | \* | \* | \* | \* | \* | \* | \* |
| 15 | 1 | 0 | 1 | 1 | \* | \* | \* | \* | \* | \* | \* |

Tabelul 2. Minimizarea funcției a

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x1x2  x3x4 | 00 | 01 | 11 | 10 |
| 00 | 1 | \* | 1 | 1 |
| 01 | \* | \* | 1 | \* |
| 11 |  | 1 | 1 | \* |
| 10 | 1 |  | 1 | \* |

Tabelul 2. Minimizarea funcției b

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x1x2  x3x4 | 00 | 01 | 11 | 10 |
| 00 | 1 | \* | 1 |  |
| 01 | \* | \* |  | \* |
| 11 | 1 | 1 | 1 | \* |
| 10 | 1 | 1 | 1 | \* |

Tabelul 2. Minimizarea funcției c

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x1x2  x3x4 | 00 | 01 | 11 | 10 |
| 00 | 1 | \* | 1 | 1 |
| 01 | \* | \* | 1 | \* |
| 11 | 1 | 1 | 1 | \* |
| 10 |  | 1 | 1 | \* |

Tabelul 2. Minimizarea funcției d

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x1x2  x3x4 | 00 | 01 | 11 | 10 |
| 00 | 1 | \* |  | 1 |
| 01 | \* | \* | 1 | \* |
| 11 |  | 1 | 1 | \* |
| 10 | 1 |  | 1 | \* |

Tabelul 2. Minimizarea funcției e

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x1x2  x3x4 | 00 | 01 | 11 | 10 |
| 00 | 1 | \* |  |  |
| 01 | \* | \* | 1 | \* |
| 11 |  |  | 1 | \* |
| 10 | 1 |  |  | \* |

Tabelul 2. Minimizarea funcției f

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x1x2  x3x4 | 00 | 01 | 11 | 10 |
| 00 | 1 | \* |  | 1 |
| 01 | \* | \* | 1 | \* |
| 11 |  |  | 1 | \* |
| 10 |  | 1 | 1 | \* |

Tabelul 2. Minimizarea funcției g

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x1x2  x3x4 | 00 | 01 | 11 | 10 |
| 00 |  | \* |  | 1 |
| 01 | \* | \* | 1 | \* |
| 11 |  | 1 | 1 | \* |
| 10 | 1 | 1 | 1 | \* |

Unde:

Aducerea funcțiilor la forma elementară *ȘI-NU*

Schema în setul de elemente ŞI-NU:

