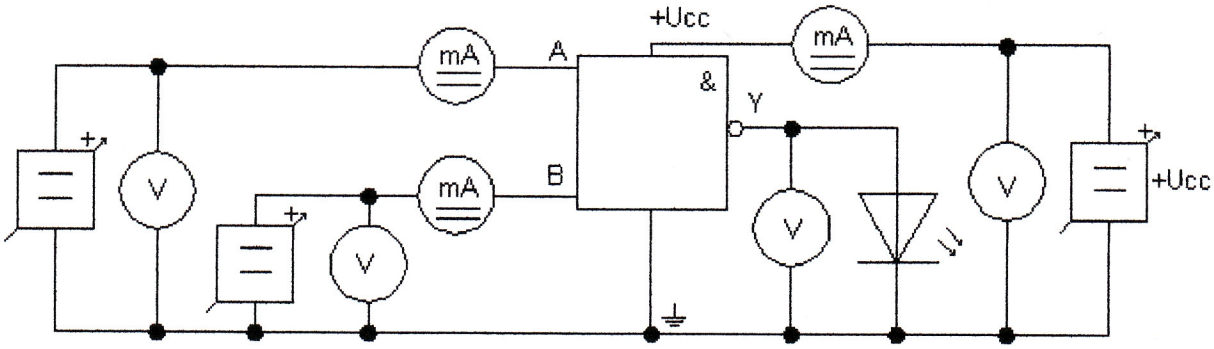
# Číslicové integrované obvody III.

Vstupno – výstupné charakteristiky

Úloha cvičenia:

1. Navrhnite schémy zapojenia pre zmeranie:
   a. $U_{VÝST.} = f(U_{VST.})$
   b. $I_{VST.} = f(U_{VST.})$
2. Zmerajte vyššie uvedené charakteristiky, krok merania zdôvodnite.
3. Zmerané hodnoty spracujte graficky v programe EXCEL(1 graf približne A5).

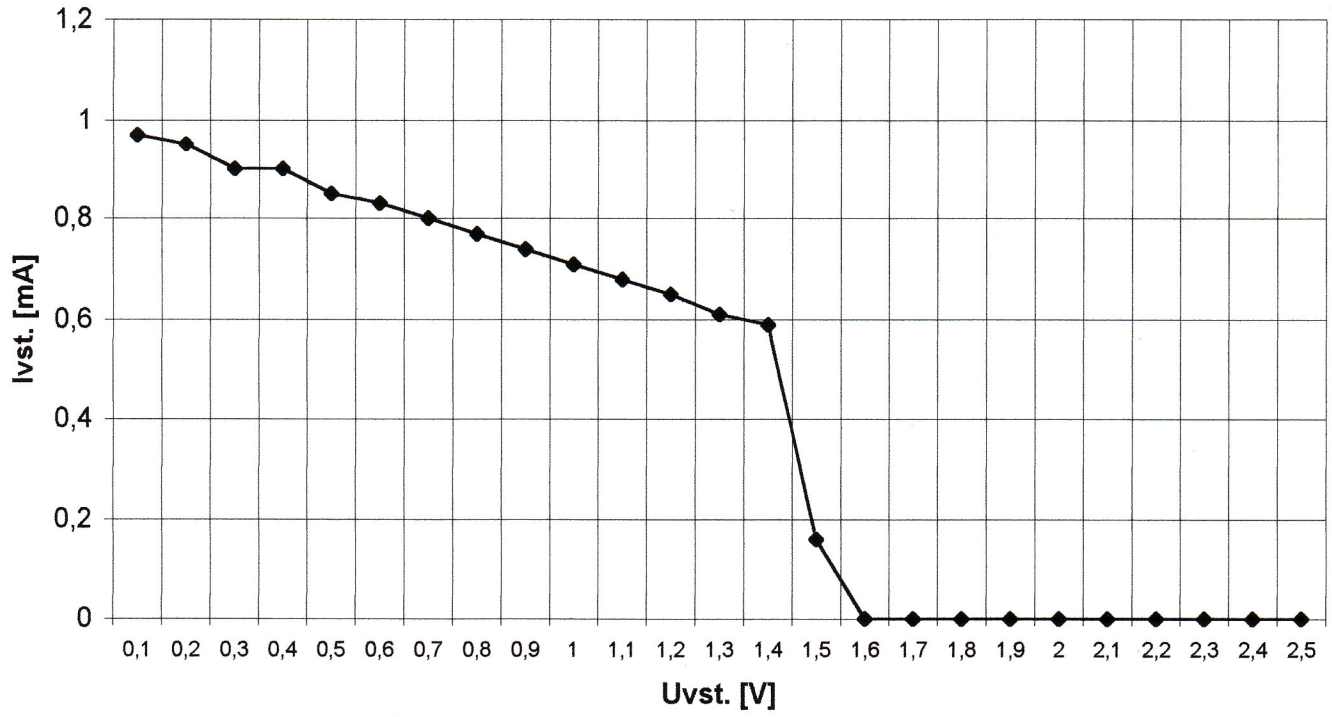
Schéma zapojenia pre MH 7400 – 1 hradlo:



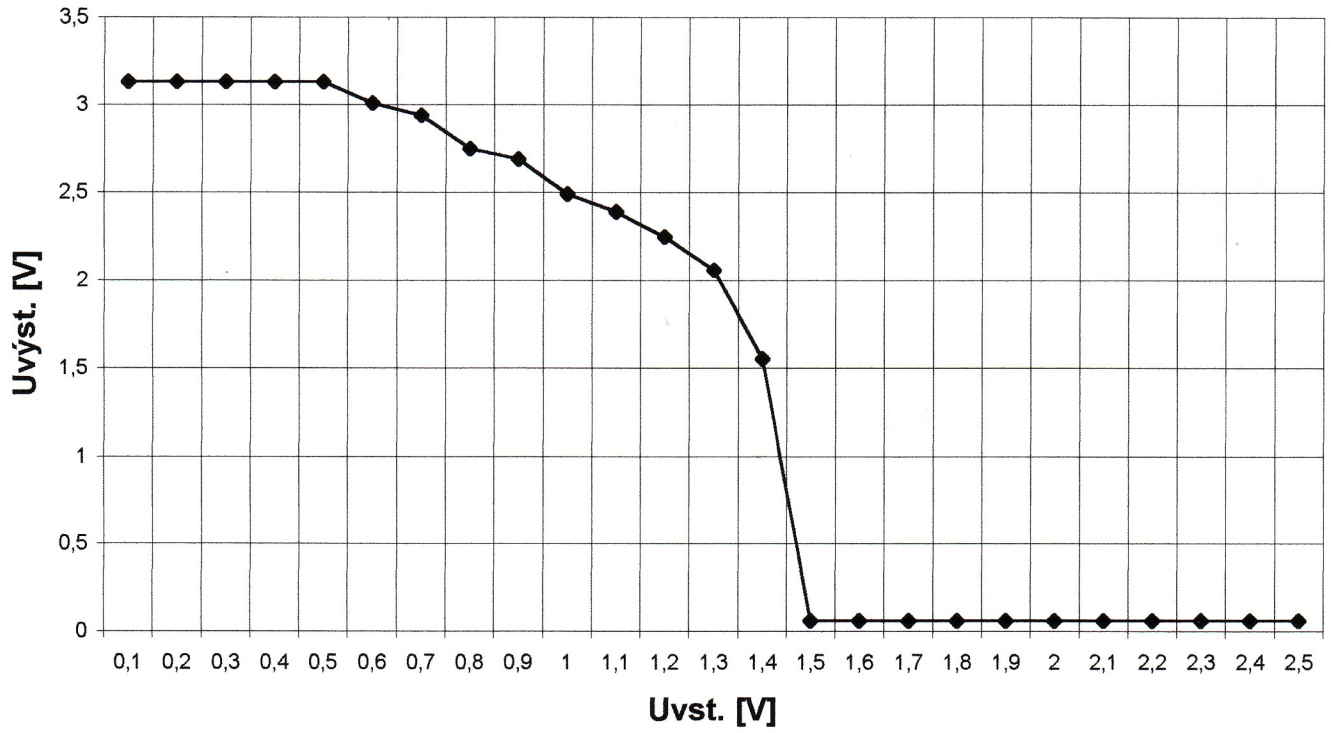

Tabuľka nameraných hodnôt MH 7400 – 1 hradlo:

| N | $U_{CC}$ [V] | $I_{CC}$ [mA] | $U_{VST.}$ [V] | $I_{VST.}$ [mA] | $U_{VÝST.}$ [V] |
|---|---|---|---|---|---|
| 1 | 5,59 | 25,0 | 0,1 | 0,97 | 3,13 |
| 2 | 5,59 | 25,0 | 0,2 | 0,95 | 3,13 |
| 3 | 5,59 | 25,0 | 0,3 | 0,9 | 3,13 |
| 4 | 5,59 | 25,0 | 0,4 | 0,9 | 3,13 |
| 5 | 5,59 | 25,0 | 0,5 | 0,85 | 3,13 |
| 6 | 5,6 | 25,0 | 0,6 | 0,83 | 3,01 |
| 7 | 5,6 | 25,0 | 0,7 | 0,8 | 2,94 |
| 8 | 5,6 | 25,0 | 0,8 | 0,77 | 2,75 |
| 9 | 5,59 | 25,0 | 0,9 | 0,74 | 2,69 |
| 10 | 5,59 | 25,0 | 1,0 | 0,71 | 2,49 |
| 11 | 5,59 | 25,0 | 1,1 | 0,68 | 2,39 |
| 12 | 5,59 | 25,0 | 1,2 | 0,65 | 2,25 |
| 13 | 5,59 | 25,0 | 1,3 | 0,61 | 2,06 |
| 14 | 5,59 | 25,0 | 1,4 | 0,59 | 1,55 |
| 15 | 5,59 | 25,0 | 1,5 | 0,16 | 0,06 |
| 16 | 5,59 | 25,0 | 1,6 | 0 | 0,06 |
| 17 | 5,59 | 25,0 | 1,7 | 0 | 0,06 |
| 18 | 5,59 | 25,0 | 1,8 | 0 | 0,06 |
| 19 | 5,59 | 25,0 | 1,9 | 0 | 0,06 |
| 20 | 5,59 | 25,0 | 2,0 | 0 | 0,06 |
| 21 | 5,59 | 25,0 | 2,1 | 0 | 0,06 |
| 22 | 5,59 | 25,0 | 2,2 | 0 | 0,06 |
| 23 | 5,59 | 25,0 | 2,3 | 0 | 0,06 |
| 24 | 5,59 | 25,0 | 2,4 | 0 | 0,06 |
| 25 | 5,59 | 25,0 | 2,5 | 0 | 0,06 |

$U_{VST.} = f(I_{VST.})$




$U_{VÝST.} = f(U_{VST.})$




Krok merania 0,1 som zvolil, aby som čo najlepšie uvidel skok z log. 1 na log. 0. Meranie charakteristík MH7404 sa neuskutočnilo pre nedostatok času.