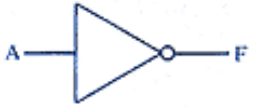
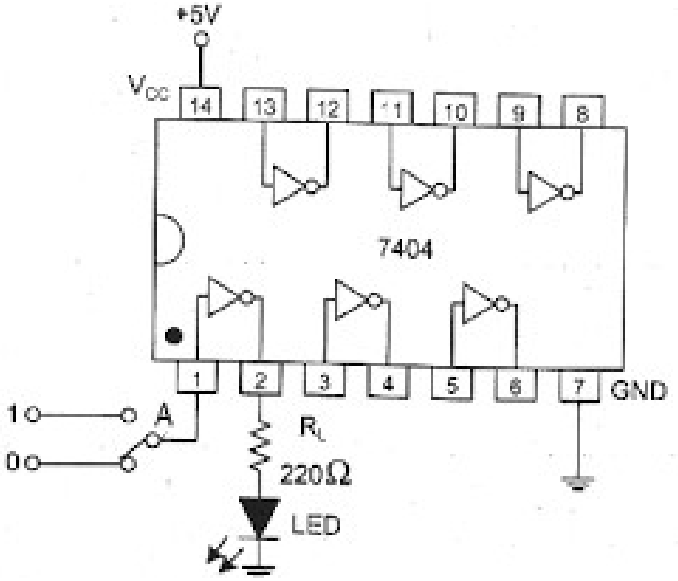
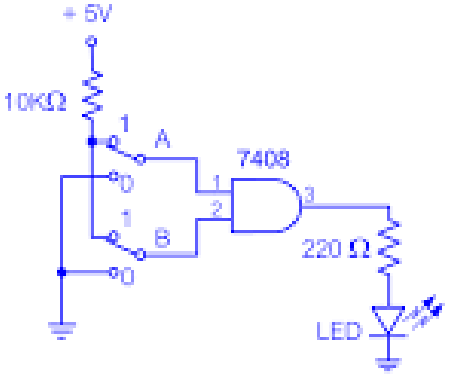
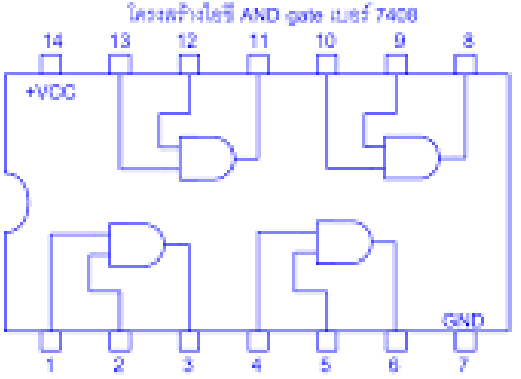
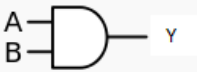
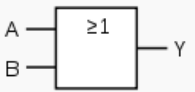
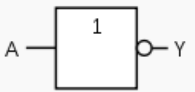
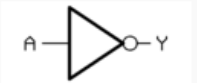
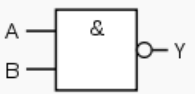
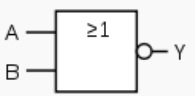
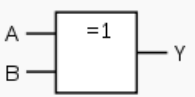
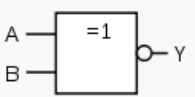
# GERBANG DIGITAL

| Name | Graphic Symbol | Algebraic Function | Truth Table |
|---|---|---|---|
| AND | | F = A • B<br>or<br>F = AB | A B \| F<br>0 0 \| 0<br>0 1 \| 0<br>1 0 \| 0<br>1 1 \| 1 |
| OR | | F = A + B | A B \| F<br>0 0 \| 0<br>0 1 \| 1<br>1 0 \| 1<br>1 1 \| 1 |
| NOT |  | $F = \overline{A}$<br>or<br>F = A' | A \| F<br>0 \| 1<br>1 \| 0 |
| NAND | | $F = (\overline{AB})$ | A B \| F<br>0 0 \| 1<br>0 1 \| 1<br>1 0 \| 1<br>1 1 \| 0 |
| NOR | | $F = (\overline{A + B})$ | A B \| F<br>0 0 \| 1<br>0 1 \| 0<br>1 0 \| 0<br>1 1 \| 0 |



| NAMA GERBANG | SIMBOL/ LAMBANG DALAM RANGKAIAN | | FUNGSI/ KARAKTERISTIK | TABEL KEBENARAN |
|---|---|---|---|---|
| | SIMBOL IEC | SIMBOL AMERIKA | | |
| ANDGATE (GERBANG AND) | |   | Gerbang AND terdiri dari dua input atau lebih. Jika salah satu input = 0 maka output akan = 0<br>**Y = A.B** | A B Y<br>0 0 0<br>0 1 0<br>1 0 0<br>1 1 1 |
| OR GATE (GERBANG OR) |   | | Gerbang OR terdiri dari dua input atau lebih. Jika salah satu input = 1 maka output akan = 1<br>**Y = A + B** | A B Y<br>0 0 0<br>0 1 1<br>1 0 1<br>1 1 1 |
| NOT GATE (GERBANG NOT) |   |   | Gerbang NOT hanya memiliki satu input. Output merupakan kebalikan dari input<br>**Y = $\overline{A}$** | A Y<br>0 1<br>1 0 |
| NAND GATE (GERBANG NAND) |   | | Gerbang NAND terdiri dari dua input atau lebih. Jika salah satu input = 0 maka output akan = 1<br>**Y = $\overline{A.B}$** | A B Y<br>0 0 1<br>0 1 1<br>1 0 1<br>1 1 0 |
| NOR GATE (GERBANG NOR) |   | | Gerbang NOR terdiri dari dua input atau lebih. Jika salah satu input = 0 maka output akan = 0<br>**Y = $\overline{A+B}$** | A B Y<br>0 0 1<br>0 1 0<br>1 0 0<br>1 1 0 |
| X-OR GATE (GERBANG X-OR) |   | | Gerbang X-OR hanya terdiri dari dua input. Jika input sama maka output akan = 0<br>**Y = A ⊕ B** | A B Y<br>0 0 0<br>0 1 1<br>1 0 1<br>1 1 0 |
| X-NOR GATE (GERBANG X-NOR) |   | | Gerbang X-NOR hanya terdiri dari dua input. Jika input sama maka output akan = 1<br>**Y = $\overline{A \oplus B}$** | A B Y<br>0 0 1<br>0 1 0<br>1 0 0<br>1 1 1 |

# SISTEM BILANGAN

| DESIMAL | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BINER | 0000 | 0001 | 0010 | 0011 | 0100 | 0101 | 0110 | 0111 | 1000 | 1001 | 1010 | 1011 | 1100 | 1101 | 1110 | 1111 |
| OKTAL | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| HEKSADESIMAL | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |

**Konversi Biner ke Heksadesimal**

Konversi biner ke heksadesimal diambil tiap-tiap empat digit mulai dari kanan, lalu dijumlahkan berdasarkan digit paling kanan memiliki faktor 20Â (penjumlahan hanya setiap 4 digit saja). Contoh: Konversikan bilangan biner 1011 01102 ke bilangan heksadesimal.

**Penyelesaian: 1 0 1 1 0 1 1 0**

**B 6**

**Jadi 1011 $0110_2$ = $B6_{16}$**

**Konversi Bilangan Biner ke Oktal**

Konversi bilagan ke oktal diambil tiga digit mulai dari kanan, lalu dijumlahkan berdasarkan digit paling kanan memiliki faktor 20 (penjumlahan hanya setiap 3 digit saja). Contoh: Konversikan bilangan biner 1111 10012 ke bilangan oktal.

**Penyelesaian: 0 1 1 1 1 1 0 0 1**

**3 7 1**

**Jadi 1111 $1001_2$ = $371_8$**

https://matkul.xyz/konversi-antar-bilangan-digital-biner-oktal-desimal-dan-heksadesimal/