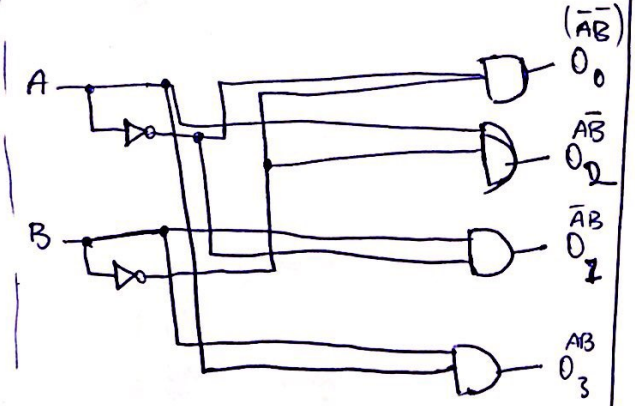
1397 ,8,6

9631407 -

Decoder 4x2

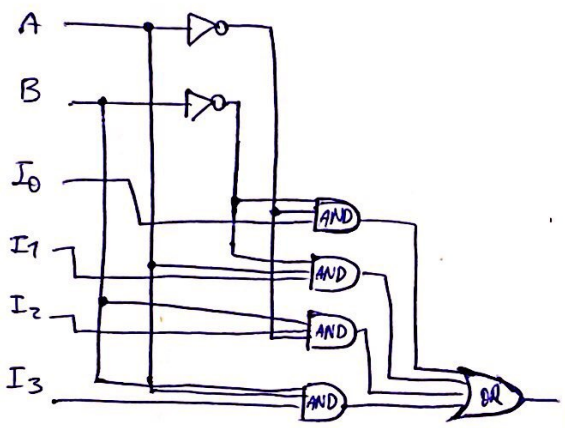
IN	out
00	0001
01	0010
11	0100
10	1000




```
module decoder (in, out, enb);
    input [1:0] in;
    input enb;
    output [3:0] out;
    wire [15:0] out;
    assign out = (enb) ?
    (1 << in) : 16'b0;
endmodule
```

MUX 4x1

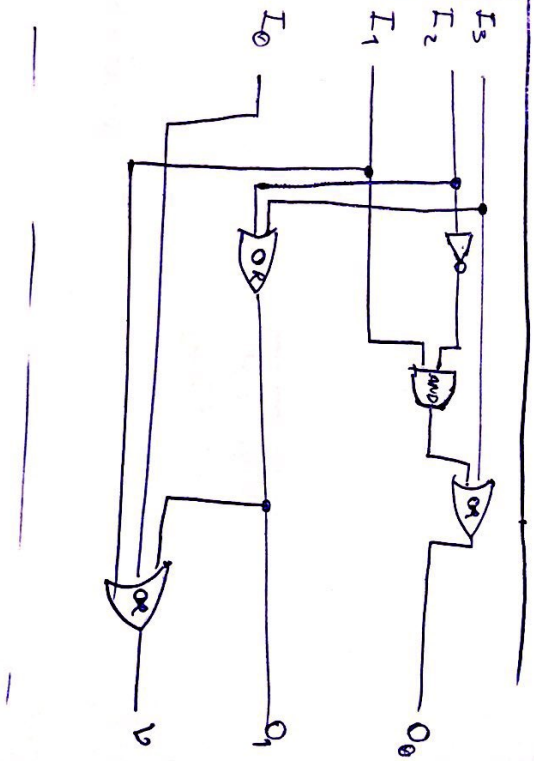
AB	Out
00	I_0
01	I_1
10	I_2
11	I_3




```
module mux (in, sel, out);
    input [3:0] in; sel;
    output out;
    wire out;
    assign out = (sel) ? in[3] :
      in[2] : in[1] : in[0];
endmodule
```

Priority Encoder 4x2

$I_3 I_2 I_1 I_0$	$O_1 O_0$ V
0 0 0 0	x x 0
0 0 0 1	0 0 1
0 0 1 x	0 1 1
0 1 x x	1 0 1
1 x x x	1 1 1




```
module pEncoder (in, v, out);
    input in[3:0]; v;
    output out[1:0];
    assign O0 = in[3] | (~in[2] & in[1]);
    assign O1 = in[3] | in[2]
    assign v = O1 | in[0] | in[1]
endmodule
```