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**D6AD**

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**DLCOA / Experiment 6**

# DLCOA Experiment 6.

Aim: To implement logic operation using decoder IC.

<u>Apparatus:</u>	Sr. no.	Component	Specification	Quantity
	1	Decoder	IC 74138	1
	2	OR Gate	IC 7432	1
	3	Trainer kit	-	1
	4	Connecting wires.	-	-

Theory:

## Decoder

A decoder is a device which does the reverse of an encoder, undoing the encoding so that the original information can be retrieved. The same method used to encode is usually just reversed in order to decode.

In digital electronics, a decoder can take the form of a multiple input, multiple output logic circuit that converts coded inputs into coded outputs, where the input and output codes are different.

Eg.  $n$ -to- $2^n$  binary coded decimal decoders.

Enable inputs must be on for the decoder to function, otherwise its outputs assume a single disabled output code word. Decoding is necessary in applications such as data multiplexing, 7 segment display and memory address decoding.



Procedure: ① Start the simulator.

② In the palette, from other components menu select 2:4 Decoder (en).

③ From the input/output menu, select bit switch and place two bit switches above the decoder.

④ Select bit display from input/output menu and place four bit displays below decoder.

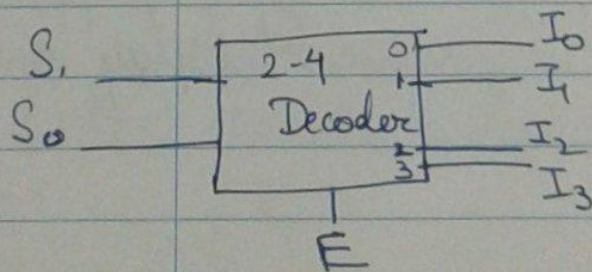
⑤ From the logic gates menu, select or gate and place it below the OR gate.

⑥ Select another bit display from input/output and place it below the OR gate.

⑦ Make the required connections using connection option from selection tool menus, give required inputs in the bit switches and click simulate.

~~Procedure~~

Conclusion: In general, a decoder has  $N$  inputs lines to handle  $N$  bits and form one to  $2^N$  output lines to indicate the presence of one or more  $N$ -bit combinations.



OUTPUT:

