# EXPERIMENT NO.: - 6

**AIM:** To study the operation of de-multiplexer circuit.

**THEORY:**

A demultiplexer is a MSI logic circuit capable of routing data from a single source to one of a number of possible destinations the data bits are applied at the enable inputs and they appear at an output specified by the address inputs A0, A1,A2.

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| **Untitled4** |

Here IC 74138 is used which decodes one of eight lines based upon the conditions at the three binary select inputs and the three enable inputs. The connection diagram and function table are shown below.



|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| INPUTS | | | | | OUTPUTS | | | | | | | |
| ENABLE | | SELECT | | |
| G1 | G2 | C | B | A | Y0 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 |
| X | H | X | X | X | H | H | H | H | H | H | H | H |
| L | X | X | X | X | H | H | H | H | H | H | H | H |
| H | L | L | L | L | L | H | H | H | H | H | H | H |
| H | L | L | L | H | H | L | H | H | H | H | H | H |
| H | L | L | H | L | H | H | L | H | H | H | H | H |
| H | L | L | H | H | H | H | H | L | H | H | H | H |
| H | L | H | L | L | H | H | H | H | L | H | H | H |
| H | L | H | L | H | H | H | H | H | H | L | H | H |
| H | L | H | H | L | H | H | H | H | H | H | L | H |
| H | L | H | H | H | H | H | H | H | H | H | H | L |

**EQUIPMENT REQUIRED:**

-Trainer kit

**COMPONENTS REQUIRED:**

**-**ICs 74138.

**-**Hook up wires.

**PROCEDURE:**

1. Switch ON the power supply.
2. Set G1, G2A and G2B at low level.
3. Set inputs C, B, A at low level.
4. All output must be at high level ( i.e. all LED should glow - condition no.2)
5. Set G1, G2A and G2B at high level & inputs C, B, A as it is i.e. at low level.
6. All output must be at high level (i.e. all LED should glow – condition no.1)
7. Set G1 at high level and G2A and G2B at low level.
8. Set C, B, A at any different levels and check the outputs as per truth table, for example, if you adjust C, B, A to 0 1 0 , the output Y2 only will be low, others will be at high level – condition no.5.

**OBSERVATION:**

**CONCLUSION:**