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Analogy project

Aim:

Conversion of BCD (Binary Coded Decimal) to Excess 3 code using foam board.

Apparatus Required:

S.No.	Components	Range	Quantity
1.	Foam board	80 X 80 cm	2
2.	Board Pins	-	1
3.	Color paint	-	1
4.	Glue	-	1

Circuit Diagram:



Tabulation:

Binary Coded Decimal				Excess 3 code			
0	0	0	0	0	0	1	1
0	0	0	1	0	1	0	0
0	0	1	0	0	1	0	1
0	0	1	1	0	1	1	0
0	1	0	0	0	1	1	1
0	1	0	1	1	0	0	0
0	1	1	0	1	0	0	1
0	1	1	1	1	0	1	0
1	0	0	0	1	0	1	1
1	0	0	1	1	1	0	0

Working/operation:

The working of this analogy model is given below:

- The first gear represents BCD numbers and the second gear represents Excess-3 numbers
- In the gears white colour is for one and black colour represents value of zero .
- For both the gears , the shape nearer to inner part of the gear is Most Significant Bit (MSB) and the one on the outer part of Gera represents Least Significant Bit (LSB)
- Whereas the highlighted part represents the conversion from BCD input to Excess-3 output.
- Speaking about the working of the model when we are rotating the first gear ie. giving a BCD input then the moving of second gear is automated and it gives a an Excess-3 converted output .
- For example, if we take 0010 as BCD input (i.e. Value of 2 in decimal), we get an output of 0101 in Excess-3 (i.e. 5 in decimal).

Results:

when we are giving BCD input we are accurately obtaining the Excess-3 output.

Uses:

- The BCD (Binary Coded Decimal) to Excess-3 code converter is a digital circuit that transforms BCD input into Excess-3 output. By implementing this converter, we can perform arithmetic operations more efficiently in BCD-coded systems. The converter allows for direct conversion between BCD and Excess-3 codes, enabling compatibility between different systems that use these representations.
- One practical application of a BCD to Excess-3 code converter is in digital display systems. By converting BCD-encoded numbers to Excess-3, the converter enables the display of decimal digits using a 7-segment display or similar output device. This converter is commonly used in digital clocks, calculators, and other devices where decimal representation is required.