



INDRAPRASTHA INSTITUTE *of*  
INFORMATION TECHNOLOGY  
DELHI

Department  
of  
Electronics & Communication Engineering

ECE111|Digital Circuits  
Section: B

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Date

## Problem 1

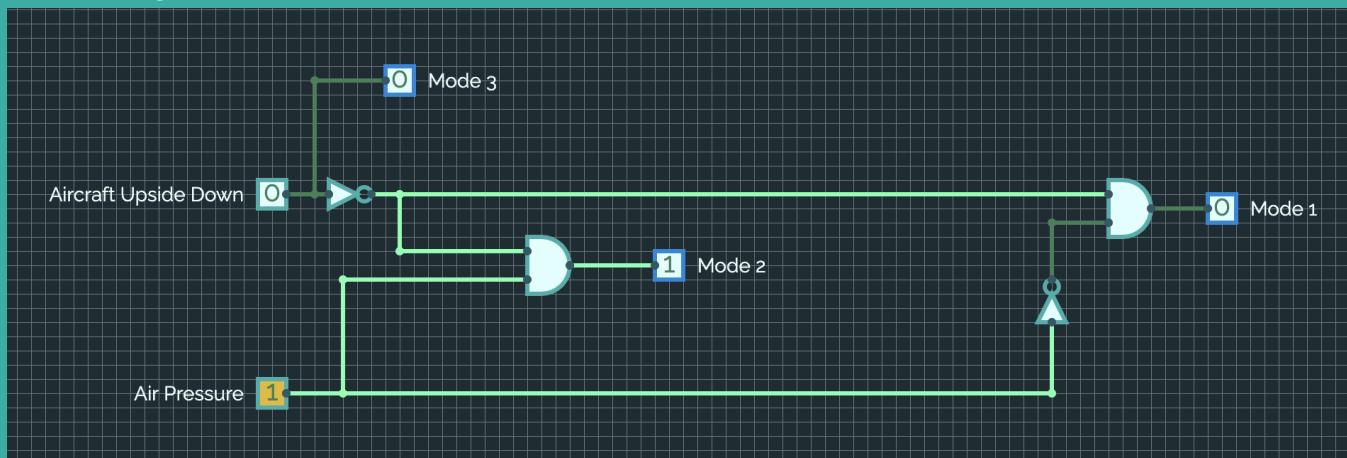
Aim: To select the right mode of ejection of aircraft seat depending on the condition.

Components/ICs Used: input, output, AND, NOT gate

Link of CIRCUITVERSE Workspace:

<https://circuitverse.org/simulator/edit/lab05-a46edf6e-9a8c-4b5c-9d72-8679e061fe50>

Circuit Diagram:



Truth Table:

Upside Down	Air Pressure	Mode 1	Mode 2	Mode 3
0	0	1	0	0
0	1	0	1	0
1	0	0	0	1
1	1	0	0	1

Solution:

By the truth table

Mode 1 =  $\text{UpsideDown}' * \text{AirPressure}'$

Mode 2 =  $\text{UpsideDown}'' * \text{AirPressure}$

Mode 3 =  $\text{Upside Down}$

Observations/Results: Correct mode is selected considering the orientation of the aircraft and the air pressure.

## Problem 2

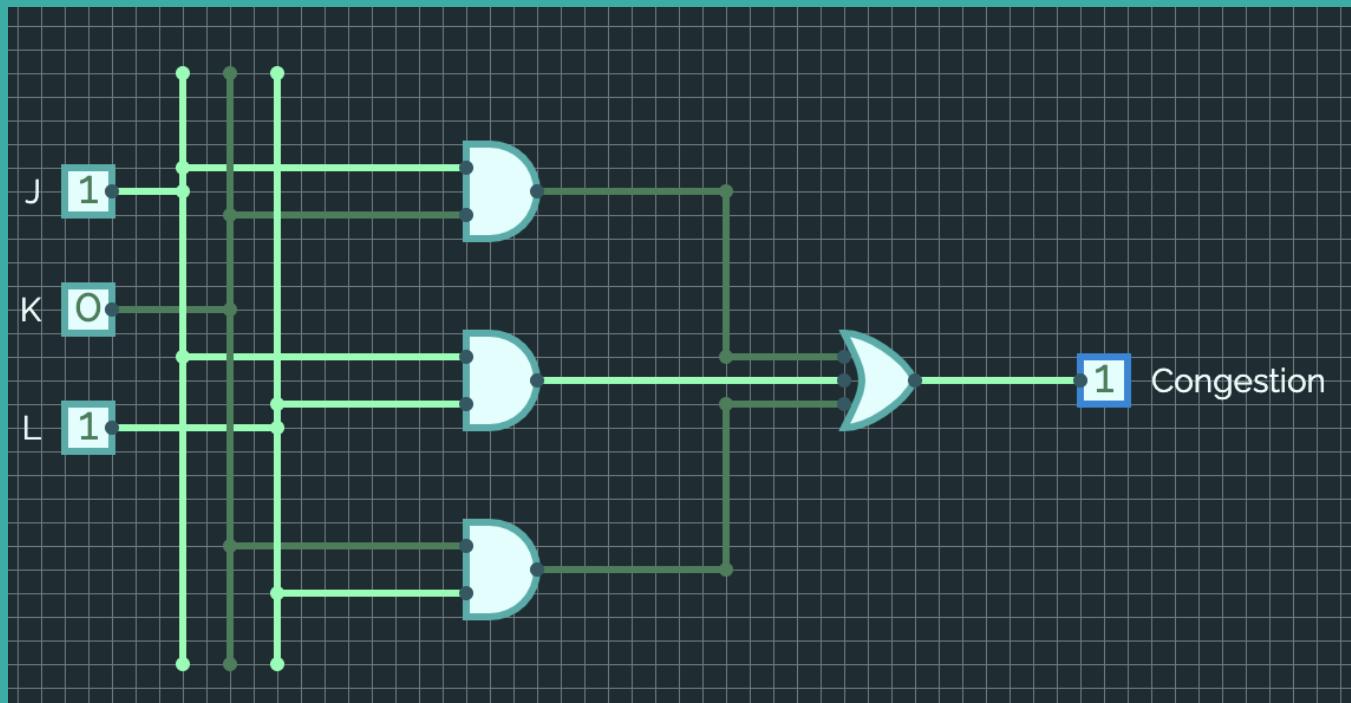
Aim: To check whether there is congestion on the roundabout or not

Components/ICs Used: input, output, AND, 3-input OR gate

Link of CIRCUITVERSE Workspace:

<https://circuitverse.org/simulator/edit/lab05-a46edf6e-9a8c-4b5c-9d72-8679e061fe50>

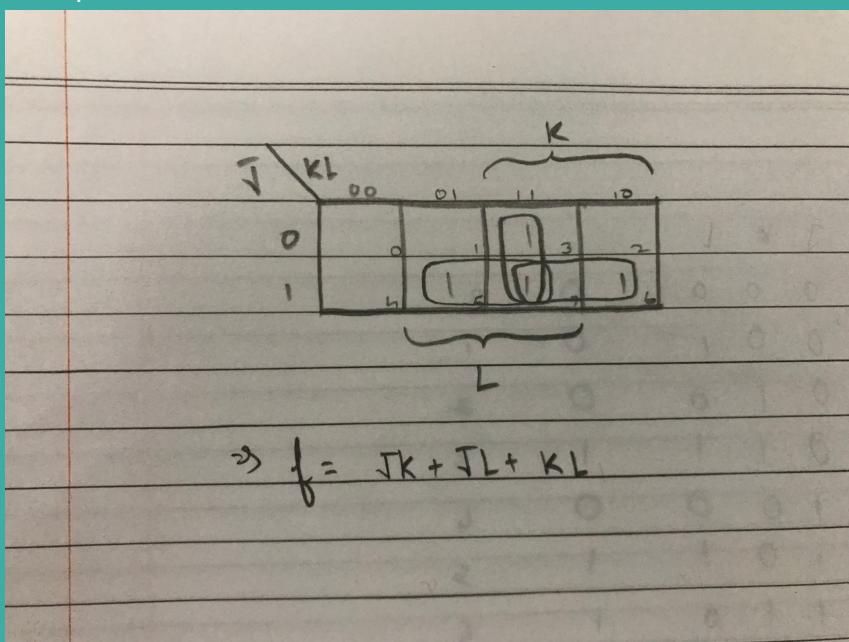
Circuit Diagram:



Truth Table:

J	K	L	Congestion
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

K maps:



Observations/Results: The congestion is detected when there is traffic waiting at atleast two roads.