CS 223 Lab 01 (Preliminary Report)

Nabeeha Khan
22301304

Truth Table:

S_1	S_2	S_3	Minterm	Maxterm	f
0	0	0	$\bar{S}_1\bar{S}_2\bar{S}_3$	$S_1+S_2+S_3$	0
0	0	1	$\bar{S}_1\bar{S}_2S_3$	$S_1+S_2+\bar{S}_3$	1
0	1	0	$\bar{S}_1S_2\bar{S}_3$	$S_1+\bar{S}_2+S_3$	1
0	1	1	$\bar{S}_1S_2S_3$	$S_1+\bar{S}_2+\bar{S}_3$	0
1	0	0	$S_1\bar{S}_2\bar{S}_3$	$\bar{S}_1+S_2+S_3$	1
1	0	1	$S_1\bar{S}_2S_3$	$\bar{S}_1+S_2+\bar{S}_3$	0
1	1	0	$S_1S_2\bar{S}_3$	$\bar{S}_1+\bar{S}_2+S_3$	0
1	1	1	$S_1S_2S_3$	$\bar{S}_1+\bar{S}_2+S_3$	1

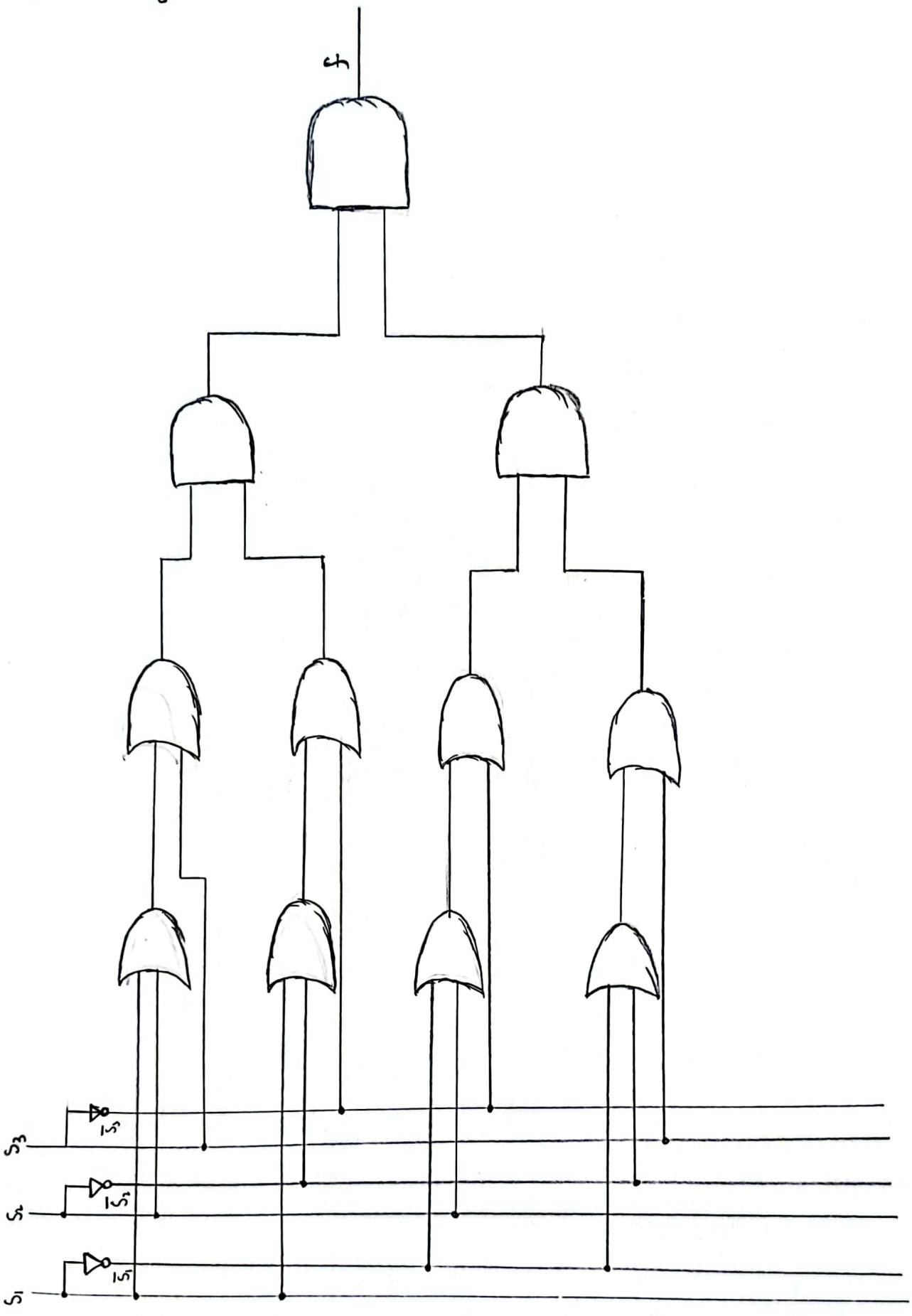
Sum of Product Expression: $f = \Sigma(1,2,4,7) = \bar{S}_1\bar{S}_2S_3 + \bar{S}_1S_2\bar{S}_3 + S_1\bar{S}_2\bar{S}_3 + S_1S_2S_3$

Product of Sum Expression: $f = \Pi(0,3,5,6) = (S_1+S_2+S_3)\cdot(S_1+\bar{S}_2+\bar{S}_3)\cdot(\bar{S}_1+S_2+\bar{S}_3)\cdot(\bar{S}_1+\bar{S}_2+S_3)$

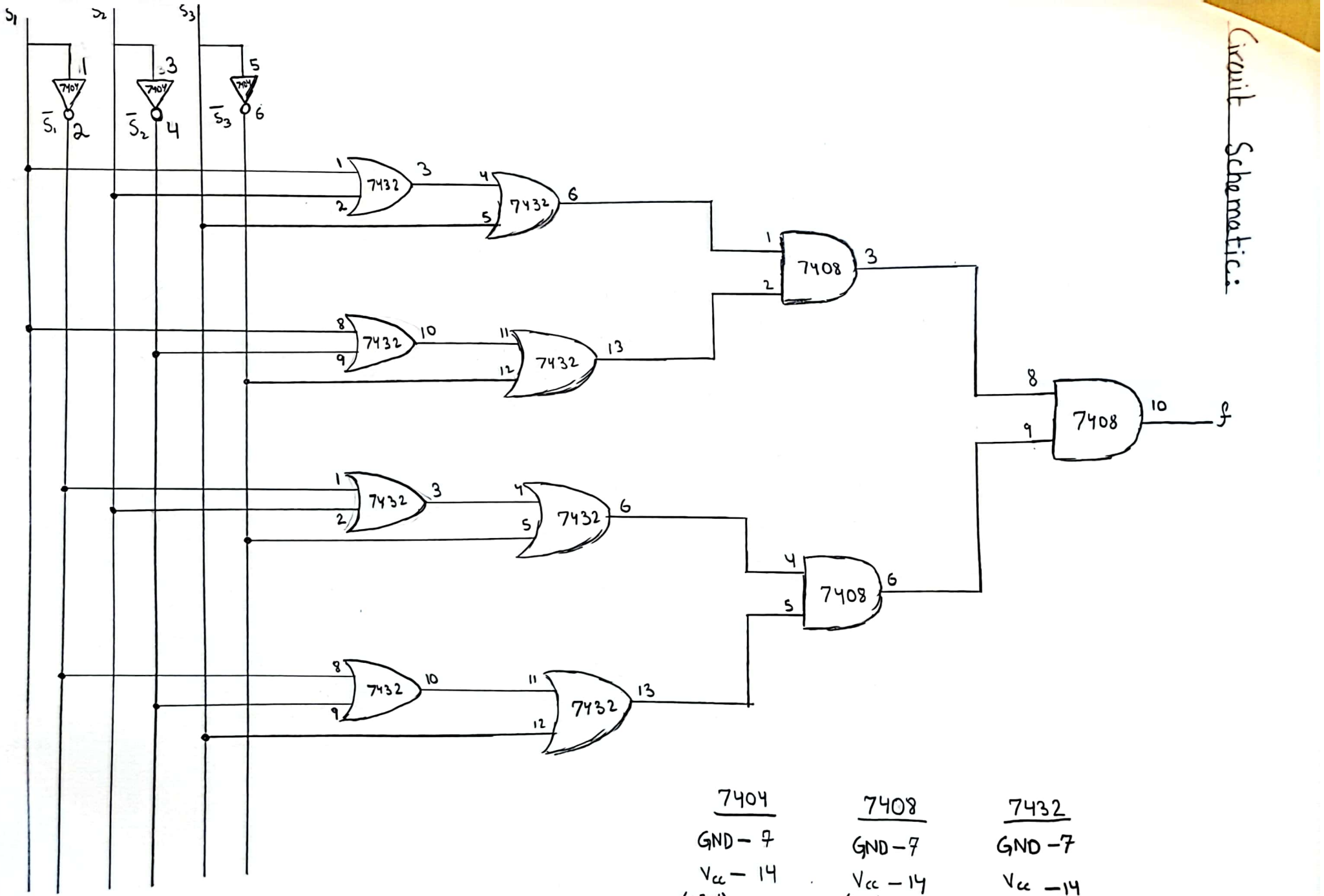
IC List:

1) 1 7404 six INVERTER
2) 2 7432 quad 2-input OR
3) 1 7408 quad 2 input AND

Logic Diagram:



Circuit Schematic



7404	7408	7432
GND – 7	GND – 7	GND – 7
V_{cc} – 14 (+5V)	V_{cc} – 14 (+5V)	V_{cc} – 14 (+5V)