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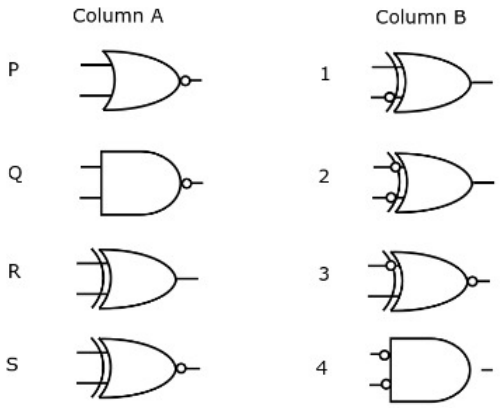
GATE Question Paper 2010, EC Question Number 411

Question 11 Analysis

Question:

match the logic gates in **column A** with equivalent to the **column 2**



(A) P-2,Q-4,R-1,S-3 (B) P-4,Q-2.R-1,S-3 (C) P-2,Q-4,R-3,S-1 (D) P-4,Q-2,R-3,S-1

Truth Tables for Custom Logic Gates

1. **1st Gate:** Output $= \text{NOT}(A \vee B)$
2. **2nd Gate:** Output $= \text{NOT}(A \wedge B)$
3. **3rd Gate:** Output $= A \oplus B$
4. **4th Gate:** Output $= \text{NOT}(A \oplus B)$
5. **5th Gate:** Output $= A \oplus \text{NOT}(B)$
6. **6th Gate:** Output $= \text{NOT}(A) \vee \text{NOT}(B)$
7. **7th Gate:** Output $= \text{NOT}(\text{NOT}(A) \oplus B)$
8. **8th Gate:** Output $= \text{NOT}(A) \wedge \text{NOT}(B)$

Truth Tables

- **1st Gate**

A	B	OUT
0	0	1
0	1	0
1	0	0
1	1	0

- **2nd Gate**

A	B	OUT
0	0	1
0	1	1
1	0	1
1	1	0

- **3rd Gate**

A	B	OUT
0	0	0
0	1	1
1	0	1
1	1	0

- **4th Gate**

A	B	OUT
0	0	1
0	1	0
1	0	0
1	1	1

- **5th Gate**

A	B	OUT
0	0	1
0	1	0
1	0	0
1	1	1

- **6th Gate**

A	B	OUT
0	0	1
0	1	1
1	0	1
1	1	0

- **7th Gate**

A	B	OUT
0	0	0
0	1	1
1	0	1
1	1	0

- **8th Gate**

A	B	OUT
0	0	1
0	1	0
1	0	0
1	1	0

Matching Gate Outputs

- 1st == 8th
- 2nd == 6th
- 3rd == 7th
- 4th == 5th

the correct answer is (D) P-4,Q-2,R-3,S-1