

Easy

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Consider the following statements regarding Decoder circuit: 1. Decoder converts binary input into one-hot output activating only one output line. 2. It can be

A

1 and 3 only

B

2 and 3 only

C

1 and 2 only

Correct

D

1, 2 and 3

Correct Answer: C

Full Detailed Explanation

Correct Answer: C - 1 and 2 only

Quick Concept Explanation A decoder maps an n -bit code to one of up to 2^n output lines, commonly as a one-hot output. Decoders are used in memory/address selection and can implement minterm-based logic functions. Key relation: n inputs → up to 2^n decoded outputs. Exam focus: Only the selected output is asserted in ideal one-hot decoding. Common trap: All decoder outputs are not active simultaneously. Statement-wise Verification

Statement 1 - Correct. Decoder converts binary input into one-hot output activating only one output line. A decoder maps an n -bit code to one of up to 2^n output lines, commonly as a one-hot output. Statement 2 - Correct. It can be used for function generation and memory addressing operations. Decoders are used in memory/address selection and can implement minterm-based logic functions. Statement 3 - Incorrect. All outputs of decoder remain active simultaneously during operation. A conventional decoder asserts only the selected one-hot output (subject to active-high/low convention)

Core Concept A decoder maps an n -bit code to one of up to 2^n output lines, commonly as a one-hot output. Decoders are used in memory/address selection and can implement minterm-based logic functions. Formula / Key Relationship n inputs → up to 2^n decoded outputs.

Why the Other Options Are Wrong Option A is incorrect because it includes