

Easy

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Consider the following statements regarding Digital Multiplexer: 1. A multiplexer selects one of many inputs based on select lines and routes it to a single

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 multiplexer routes one of many data inputs to a single output according to select inputs. By wiring data inputs to

constants/variables appropriately, a multiplexer can implement Boolean functions. Key relation:

$N=2^m$ inputs for m select lines.Exam focus: MUX is both a selector and a logic-function building block. Common trap: Do not claim a MUX cannot implement arbitrary Boolean functions.

Statement-wise Verification Statement 1 - Correct.A multiplexer selects one of many inputs based on select lines and routes it to a single output.A multiplexer routes one of many data inputs to

a single output according to select inputs. Statement 2 - Correct.Number of select lines

required is $\log_2$ of the number of inputs. $N=2^m$ inputs for m select lines. Statement 3 -

Incorrect.Multiplexer cannot implement arbitrary Boolean functions directly.A multiplexer can implement Boolean functions by suitable assignment of data inputs Core Concept A multiplexer

routes one of many data inputs to a single output according to select inputs. An N -to-1

multiplexer needs $\log_2 N$ select lines when N is a power of two. By wiring data inputs to

constants/variables appropriately, a multiplexer can implement Boolean functions. Formula / Key

Relationship $N=2^m$ inputs for m select lines. Why the Other Options Are Wrong Option A is