

Medium

Deputy Executive Engineer (Electrician)

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Gujarat Public Service Commission / Assistant Engineer (Electrical)

**Consider the following statements: HVDC transmission is superior to HVAC transmission due to 1. Lack of reliable DC circuit breakers. 2. Lesser number of conductors**

A

4 only

B

2 and 3 only

Correct

C

4 and 3 only

D

1 and 2 only

### Correct Answer: B

#### Full Detailed Explanation

Correct Answer: B - 2 and 3 only Quick Concept Explanation HVDC converts AC to DC for transmission and back to AC at the receiving end. HVDC can interconnect asynchronous AC systems.

Key relation: Typical chain: AC generation → rectifier → DC link → inverter → AC

grid/distribution.Exam focus: HVDC advantage is in the link, not DC generation/distribution in conventional grids. Common trap: Do not claim HVDC eliminates converter terminal equipment.

Statement-wise Verification Statement 1 - Incorrect.Lack of reliable DC circuit breakers.A

limitation is not an advantage of HVDC over HVAC Statement 2 - Correct.Lesser number of conductors for same power carrying capacity.HVDC can interconnect asynchronous AC systems.

Statement 3 - Correct.Non-synchronous link between the two different systems simplifying the problem of voltage stability and frequency control.HVDC can interconnect asynchronous AC

systems. Statement 4 - Incorrect.No costly terminal equipment such as converters and inverters

are required.HVDC requires costly converter stations at terminals Core Concept HVDC converts AC

to DC for transmission and back to AC at the receiving end. Long lines/cables avoid charging

current and skin effect and can have lower losses, but converter stations are costly and LCC

schemes consume reactive power. HVDC can interconnect asynchronous AC systems. Formula / Key