

3. For one mole of an ideal gas, which of these statements must be true?

(a) U and H each depends only on temperature

(b) Compressibility factor z is not equal to 1

(c)  $C_{P,m} - C_{V,m} = R$

(d)  $dU = C_V dT$  for any process

A) (a), (c) and (d)

B) (a) and (c)

C) (c) and (d)

D) (b), (c) and (d)

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**Ans: A) (a), (c) and (d)**

Explanation:

For 1 mole of ideal gas :

1. Both internal energy (U) and Enthalpy (H) depends on temperature

2. Compressibility factor  $Z = 1$

3.  $C_{P,m} - C_{V,m} = R$

4.  $dU = C_V dT$  for all process