## Assignment 1

Due on 2018-09-11, 23:00 IST.

### Question 1

When a gas is heated, changes take place in its pressure and temperature. Volume and temperature increase, and pressure and volume change inversely. No, the answer is incorrect.

### Question 2

The final density of dry air is 1290 kg/m³ at pressure 1050000 Pa. The final density of dry air if its initial density is 1290 kg/m³ and pressure is 1050000 Pa. No, the answer is incorrect.

### Question 3

The heat capacities C_p and C_v are:

- function of pressure for both calorimetrically and thermally perfect gas
- function of temperature for both calorimetrically and thermally perfect gas
- constant for calorimetrically perfect gas and function of temperature for thermally perfect gas
- function of temperature for both calorimetrically and thermally perfect gas

No, the answer is incorrect.

### Question 4

The specific heat ratio γ is:

- specific heat ratio for monatomic gas
- specific heat ratio for diatomic gas
- specific heat ratio for monoatomic gas of an ideal gas
- specific heat ratio for diatomic gas of an ideal gas

No, the answer is incorrect.

### Question 5

An isothermal process is:

- reversible
- irreversible
- adiabatic and irreversible
- adiabatic and reversible

No, the answer is incorrect.

### Question 6

The change in entropy when air is cooled to 313 K from 425 K resulting in a change in pressure from 50 kPa to 40 kPa is

\[ \Delta S = \frac{Q}{T} \]

where Q is the heat transferred, T is the temperature, and \( \Delta S \) is the change in entropy.

No, the answer is incorrect.

### Question 7

A reversible process changes the state of a system from state A to state B. Alternatively, an irreversible process can also bring about the same change in a different state. Which of the following is true?

- The entropy change during the irreversible process will be higher.
- The entropy change during the reversible process will be higher.
- The entropy change will be the same for both processes.
- The entropy change will be different and will depend on the actual process parameters.

No, the answer is incorrect.

### Question 8

The adiabatic index \( \gamma \) for a constant volume process is

\[ \gamma = \frac{c_p}{c_v} \]

No, the answer is incorrect.

### Question 9

The value of compressibility factor of air which is compressed from 400 m³ to 200 m³ when 100 MPa of pressure is applied on it is

\[ Z = \frac{P V}{RT} \]

No, the answer is incorrect.