

Physics - FSC Part 1 Physics Chapter 11 Short Questions Preparation

Q1.	Define	absolute	zero	using	the	Carnot	cycle.

Ans 1: The Carnot cycle provides us the basis to define a temperature scale that is independent of material properties, Absolute zero is the lower limit of the thermodynamic temperature scale, a state at which the enthalpy and entropy of a cooled ideal gas reaches its minimum value, taken as zero(0). By international agreement, absolute zero is taken as - 273.15°c.

Q2. What is difference between isothermal and adiabatic process?

Ans 1: Isothermal process: The process in which temperature of the system remains constant is called isothermal process.

T= constant

Adiabatic System: The process in which no heat enters or leaves the system is called adiabatic system.

Q3. Write the four postulates of kinetic theory of gases.

Ans 1:

- 1. A finite volume of gas consists of consists of very large number of molecules.
- 2. The size of molecules is much smaller than the separation between them.
- 3. The molecules do not exert force on each other except durings a collision
- 4. The collision between gas molecules themselves and with the walls of container is assumed to be perfectly elastic.
- Q4. Why absolute value of internal energy cannot be measured?

Ans 1: By experiment it has been seen that the change in internal energy is independent of paths and it only depends upon change from initial to final state of the system. It is a function of state.

Internal energy is similar to the gravitational P.E.So like the potential energy, it is the change in internal energy and not its absolute value, which is important.

Q5. No spark plug is used in Diesel Engine. How it gets ignition?

Ans 1: Diesel is sprayed into the cylinder at maximum compression. Because air is at very high temperature immediately after compression, the fuel mixture ignites on contact with the air on the cylinder.

Q6. Give an example of a natural process that involves an increase in entropy.

Ans 1:

Q7. Define the term internal energy. Discuss in what form it is in an ideal gas.

Ans 1: The sum of all forms of molecular energies such as kinetic and potential energy of a substance is called its internal energy. Internal energy of an ideal gas system is generally the translational kinetic energy of gas molecules.

Q8. Is it possible to construct a heat engine that will not expel heat into the atmosphere?

Ans 1: No, it is not possible to construct a heat engine that will not expel heat into the atmosphere. It is against 2nd law of thermodynamics. A heat engine works only when some of the total heat absorbed from the source is expelled to a sink or atmosphere.

Q9. Why we reduce pressure in the tyre while moving on motorway?

Ans 1: We reduce the pressure in the tyre while moving on motorway because when a car is driven through some distance,its tyres become hot due to work done against friction between the tyres and the road which appears as heat. This heat is absorbed by the gas molecules contained in the tyre which results in an increase in pressure of the gas. If the pressure in the tyre is not reduced then the tyre may burst.

Q10. Write kelvin statement of the second law of thermodynamics.

Ans 1: It is impossible to devise a process which may convert heat, extracted from a single reservoir, entirely into work without leaving any change in the working system.