Lesson Plan 6

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Title**: **Chapter 19: The kinetic theory of gases** | | **Ref. No**: Week 3,  Day 2 | | |
| **Target Group/Population**: B. Sc students (CS, EEE and IPE) | | **Duration**: 90 min | | |
| **Aims/Rationale**: To give the students basic concepts of pressure, temperature and RMS speed and translational kinetic energy | | | | |
| **Learning Outcomes**: At the end of the session, the students will be able to understand and analyze above topics and apply those to solve related problems. | | | | |
| **Contents:** 19-3: Pressure, Temperature, and RMS speed, 19-4: Translational kinetic energy | Method or  Technique | | Resource  or Aid | Time |
| **Introduction**:   * Welcome address * Rapport building * Review the main topics of last lecture * Importance/bridging the topic * Pre-assessment of student’s knowledge | Lecture  QA | | WB  MMP | 15 min |
| **Development**:  1. For an ideal gas, derive the expression for rms speed as a function of temperature.  2. Derive the relationship between the average kinetic energy and the temperature of the gas. | Lecture  Discussion  QA  Problem Solving | | WB  MMP | 60 min |
| **Conclusion**:   * Quick recap/summary * Feedback from the students * References * Forward planning |  | | WB  MMP | 15 min |
| Problems:  18. The temperature and pressure in the Sun’s atmosphere are 2.00x106 K and 0.0300 Pa. Calculate the rms speed of free electrons (mass 9.11x10-31 kg) there, assuming they are an ideal gas.  25. Determine the average value of the translational kinetic energy of the molecules of an ideal gas at temperatures (a) 0.00 0C and (b) 100 0C. What is the translational kinetic energy per mole of an ideal gas at (c) 0.00 0C and (d) 100 0C? | | | | |