LECTURE 33

INTRODUCTION TO PNEUMATICS

FREQUENTLY ASKED QUESTIONS

1. Define Pneumatics

Answer: Pneumatics may be defined as branch of engineering science which deals with the study of the behavior and application of compressed air. Pneumatics can also be defined as the branch of fluid power technology that deals with generation, transmission and control of power using pressurized air

2. List four common ways of transmitting power in Industry
Answer: Four common ways of transmitting power are
1. Mechanical power transmission
2. Electrical power transmission
3. Hydraulic power transmission
4. Pneumatic power transmission

3. Name three reasons for considering the use of pneumatics instead of hydraulics
Answer
1. Liquid exhibit greater inertia than do gases. Therefore, in hydraulic systems the weight of oil is a potential problem when accelerating and decelerating actuators and when suddenly opening and closing valves
2. Liquid also exhibit greater viscosity than do gases. This results in larger frictional pressure and power losses
3. Hydraulic systems use a fluid foreign to atmosphere, they require special reservoirs and no-leak system designs. Pneumatics use air that is exhausted directly back to surrounding environment. Generally speaking, pneumatic systems are less expensive than hydraulic systems.

4. What is the difference between free air and standard air?
Answer: Free air: Air at the atmospheric condition at the point where the compressor is located is defined as free air. **Standard air**: It is defined as the air at sea level conditions that is at pressure of 1.01324 bar, temperature of 20 ℃ and Relative humidity of 36%

5. Pneumatic systems cannot provide precise position control – Justify

Answer: Due to high compressibility of air, pneumatics cannot provide precise actuator control and precise positioning control