UNIT I

Chapter 1 : Introduction to Hydraulic and Pneumatic System 1-1 to 1-28

Syllabus :

1.1 General layout of oil hydraulics and pneumatic system

1.2 Applications, merits limitations of oil hydraulic and pneumatics system.

1.3 Properties of fluids, ISO and SAE grades of oil.

1.4 ISO symbols used in hydraulic and pneumatic system.

1.5 Hazards and safety in Industrial hydraulic and Pneumatics.

UNIT II

Chapter 2 : Pumps and Actuators 2-1 to 2-45

Syllabus :

2.1 Classification of pumps.

2.2 Construction and working of Gear, Vane, Screw, piston pumps (axial and radial).

2.3 Performance characteristics and Selection of Pumps.

2.4 Classification of Hydraulic and Pneumatic actuators.

2.5 Construction and working of Linear and rotary actuators (Motors).

UNIT III

Syllabus :

3.1 Classification of Control valves.
3.2 Pressure control valves - relief, unloading, sequence, counter balance, pressure reducing valves.
3.3 Direction control valves - Check valve, 2/2, 3/2, 4/2, 4/3, 5/2, 5/3 D.C. Valves used in Hydraulics and Pneumatics.
3.4 Standard centre positions, Methods of actuation.
3.5 Flow control valves - Non-compensated, Pressure and temperature compensated.

UNIT VI

Syllabus :

6.1 Direct / Indirect Control of Single and Double Acting Air cylinders, motors.

6.2 Speed control circuit for cylinders and motors.

6.3 Sequencing circuits, Logic AND/OR circuits, Time delay circuits, piston continuous back and forth.

6.4 Simple Hydro-pneumatic applications.

6.5 Simple Electro-Pneumatic circuits.

6.6 Remedies and fault detection in Pneumatic circuits

6.7 Maintenance of hydraulic and Pneumatic systems.

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