



15.5.7	Sizing of Air Receivers	15-5	15.12	Speed Regulating Methods Used in Pneumatics	15-10
15.5.8	Selection of Air Compressors	15-5	15.13	Differences between Hydraulic and Pneumatic Control Systems	15-11
15.6	Pneumatic Filters	15-5	15.14	Force Balance Type Controllers	15-11
15.6.1	Main Components of Filter Assembly	15-5	15.14.1	Operation of the Controller	15-12
15.7	Pressure Regulators (Air Pressure Regulator).....	15-6	15.15	Force Distance (Displacement) Type Controllers	15-12
15.8	Lubricator	15-7	15.16	Nozzle - Flapper Amplifier (Flapper – Nozzle)	15-13
15.8.1	Working Principle of a Lubricator.....	15-7	15.17	Pneumatic Proportional Controller.....	15-13
15.8.2	Lubricator Assembly.....	15-7	15.18	Pneumatic Proportional - Integral Controller	15-14
15.9	Filter, Regulator and Lubricator (FRL) Units	15-8	15.19	Pneumatic Proportional - Derivative Control	15-15
15.10	Pneumatic Valves.....	15-8	15.20	Pneumatic Proportional - Integral -Derivative Controller (PID Controller)	15-15
15.10.1	Pressure Control Valves.....	15-8	➤ Appendix – A : Solved University Question Paper of Dec. 2020.....A- 1 to A-2		
15.10.2	Direction Control Valves	15-8			
15.10.2(A)	DCV Ports	15-8			
15.10.2(B)	Classification of DCVs.....	15-9			
15.10.2(C)	Two Way Valves	15-9			
15.10.2(D)	Three Way Valves.....	15-9			
15.11	Shuttle Valves	15-10			