

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering - SEMESTER - III EXAMINATION - WINTER 2025

Subject Code: BE03023031

Date: 19-12-2025

Subject Name: Hydraulics & Pneumatics in Plastic Industry

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**
- 4. Simple and non-programmable scientific calculators are allowed.**

	Marks
Q.1 (a) Define and Explain Pascal's Law in brief.	03
(b) Compare: Hydraulic System with Pneumatic System.	04
(c) List advantages and disadvantages of Hydraulic System.	07
Q.2 (a) Fill in the blanks.	03
(1) _____ protects the system by momentarily diverting flow the tank during reversing and when piston is stalled or stops at end of stroke.(Pilot operated check valve,Relief Valve,Flow control valve)	
(2) A hydro-static system uses fluid _____ to transmit power.(Pressure,motion)	
(3) The _____ type packing is used on the injection and clamping cylinder to seal between the piston and housing.(V,U,Cup)	
(b) Compare : Filter and Strainer.	04
(c) Explain Pilot operated check valve with neat sketch.	07
OR	
(c) Explain construction and working of Four way valve with neat sketch.	07
Q.3 (a) Draw symbol of following: (1) Line , working (2) Motor,Rotary-Fixed displacement (3) Accumulator,Gas charged	03
(b) Solve:In a hydraulic jack, it is required to move a load of 3000 kg up by 10 mm. Calculate the force to be applied on a pump having cross section area 30 cm ² , if the jack side area is 300 cm ² . Also calculate the movement of the plunger.	04
(c) Explain Balanced Piston type Pressure Relief valve with neat sketch.	07
OR	
(a) Draw the neat sketch of Two-way valve.	03
(b) List and explain basic properties required of good hydraulic oil.	04
(c) List and explain in brief basic components of Pneumatic System.	07
Q.4 (a) Define Accumulators. List types of Accumulators.	03

(b) Draw symbol of following: (1) Check valve (2) Temperature Gauge (3) Pressure reducing valve. (4) Valve actuating method, Push button. **04**

(c) Explain the Deceleration circuit with neat sketch. **07**

OR

(a) Explain basic Principle of Pressure Intensifier. **03**

(b) List types of Pumps. Explain External Gear Pump in brief. **04**

(c) Explain principle, construction and working of single stage Air compressor. **07**

Q.5 (a) Explain about connectors used in the hydraulic system (In Injection Molding Machine). **03**

(b) Give classification of Check valves. Explain Inline check valve with neat sketch. **04**

(c) Explain Flow control valve in detail with neat sketch. **07**

OR

(a) Draw and explain any Pneumatic circuit for Plastic processing Unit. **03**

(b) Explain about Spring loaded Accumulator in brief with neat sketch. **04**

(c) Draw and Explain Injection control circuit. **07**
