

Enrollment No./Seat No.:

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

**Subject Code: 3132305**

**Date: 22-12-2025**

**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.**

|                                                                                                                                                                                                                                                                                                                                                                      | <b>Marks</b> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Q.1 (a)</b> Define Check Valve. Give classification of check valve.                                                                                                                                                                                                                                                                                               | <b>03</b>    |
| <b>(b)</b> Explain Bernoulli's Principle with suitable example.                                                                                                                                                                                                                                                                                                      | <b>04</b>    |
| <b>(c)</b> List advantages and disadvantages of Hydraulics system.                                                                                                                                                                                                                                                                                                   | <b>07</b>    |
| <b>Q.2 (a)</b> 1) _____ valve permit free flow in one direction and block return flow until open by pilot signal.<br>2) In check valve, the pressure required to overcome the spring tension and open the valve is called _____.<br>3) The input component of the hydraulic power transmission system is called a _____ and the output component is called an _____. | <b>03</b>    |
| <b>(b)</b> Draw symbols of the following: (1) Line, Passing (2) Cylinder, single Acting (3) Two way Valve (4) Pressure Gauge                                                                                                                                                                                                                                         | <b>04</b>    |
| <b>(c)</b> Explain Four way valves in detail with neat sketch.                                                                                                                                                                                                                                                                                                       | <b>07</b>    |
| <b>OR</b>                                                                                                                                                                                                                                                                                                                                                            |              |
| <b>(c)</b> Draw and Explain Injection Control Circuit.                                                                                                                                                                                                                                                                                                               | <b>07</b>    |
| <b>Q.3 (a)</b> Define: Hydraulics, Proportional valve & cracking pressure.                                                                                                                                                                                                                                                                                           | <b>03</b>    |
| <b>(b)</b> Short note: Pressure Gauge                                                                                                                                                                                                                                                                                                                                | <b>04</b>    |
| <b>(c)</b> Explain Pilot-Operated check valve with neat sketch                                                                                                                                                                                                                                                                                                       | <b>07</b>    |
| <b>OR</b>                                                                                                                                                                                                                                                                                                                                                            |              |
| <b>(a)</b> Compare: Filters and strainers                                                                                                                                                                                                                                                                                                                            | <b>03</b>    |
| <b>(b)</b> Draw any one Pneumatic circuit for plastic processing industry.                                                                                                                                                                                                                                                                                           | <b>04</b>    |
| <b>(c)</b> Draw and explain Deceleration circuit.                                                                                                                                                                                                                                                                                                                    | <b>07</b>    |
| <b>Q.4 (a)</b> List the types of connectors. Explain any one in brief.                                                                                                                                                                                                                                                                                               | <b>03</b>    |
| <b>(b)</b> Define and explain Pascal's law with suitable example.                                                                                                                                                                                                                                                                                                    | <b>04</b>    |
| <b>(c)</b> Explain about pressure relief valve in detail with neat sketch.                                                                                                                                                                                                                                                                                           | <b>07</b>    |

**OR**

- |                |                                                                                       |    |
|----------------|---------------------------------------------------------------------------------------|----|
| (a)            | Explain about Packing and seals in brief.                                             | 03 |
| (b)            | Give the classification of Pumps.                                                     | 04 |
| (c)            | Explain Gear Pump in detail with neat sketch.                                         | 07 |
| <b>Q.5</b> (a) | Define and explain Pascal's law with suitable example.                                | 03 |
| (b)            | Compare: Hydraulics and Pneumatic.                                                    | 04 |
| (c)            | Draw and Explain filtration Circuit. Also discuss about maintenance of Hydraulic oil. | 07 |

**OR**

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|-----|----------------------------------------------------------------------------------|----|
| (a) | List and explain in brief about ideal characteristic required for hydraulic oil. | 03 |
| (b) | Explain in brief: Reservoir                                                      | 04 |
| (c) | What is accumulator? List its types. Explain any one in detail.                  | 07 |

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