

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI EXAMINATION – SUMMER 2025****Subject Code: 3164106****Date: 28-05-2025****Subject Name: Hydraulics and Pneumatics****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**

|            |                                                                                                                      |           |
|------------|----------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Q.1</b> | <b>(a)</b> Discuss the advantages and applications of Fluid power systems.                                           | <b>03</b> |
|            | <b>(b)</b> List the primary functions and properties of hydraulic fluid.                                             | <b>04</b> |
|            | <b>(c)</b> Explain in detail construction and working of Radial piston pump with neat sketch.                        | <b>07</b> |
| <b>Q.2</b> | <b>(a)</b> Explain a pilot –operated check valve with application.                                                   | <b>03</b> |
|            | <b>(b)</b> Name and illustrate four different types of cylinder mountings.                                           | <b>04</b> |
|            | <b>(c)</b> Explain various center flow paths configurations for three –position, four way directional control Valve, | <b>07</b> |
| <b>OR</b>  |                                                                                                                      |           |
|            | <b>(c)</b> List the basic components of a hydraulic system with ANSI symbol.                                         | <b>07</b> |
| <b>Q.3</b> | <b>(a)</b> Explain Closed circuit one direction hydrostatic transmission.                                            | <b>03</b> |
|            | <b>(b)</b> Explain Operation of Electro hydraulic servo System.                                                      | <b>04</b> |
|            | <b>(c)</b> Explain the working of ‘Regenerative circuit’ with applications                                           | <b>07</b> |
| <b>OR</b>  |                                                                                                                      |           |
| <b>Q.3</b> | <b>(a)</b> Explain Accumulator as hydraulic shock absorber.                                                          | <b>03</b> |
|            | <b>(b)</b> Explain Mechanical hydraulic servo system.                                                                | <b>04</b> |
|            | <b>(c)</b> Explain meter-in & meter-out speed control of a Hydraulic cylinder.                                       | <b>07</b> |
| <b>Q.4</b> | <b>(a)</b> What is fluidics? Name advantages of its.                                                                 | <b>03</b> |
|            | <b>(b)</b> Describe screw-type compressor.                                                                           | <b>04</b> |
|            | <b>(c)</b> Explain Cascade method used in pneumatics.                                                                | <b>07</b> |
| <b>OR</b>  |                                                                                                                      |           |
| <b>Q.4</b> | <b>(a)</b> Write major advantages of electro-pneumatic system.                                                       | <b>03</b> |
|            | <b>(b)</b> Explain application of Quick Exhaust valve with sketch.                                                   | <b>04</b> |
|            | <b>(c)</b> Explain FRL unit in brief.                                                                                | <b>07</b> |
| <b>Q.5</b> | <b>(a)</b> Application of pneumatic in low cost Automation.                                                          | <b>03</b> |
|            | <b>(b)</b> Explain trouble shooting and remedies in hydraulic system.                                                | <b>04</b> |
|            | <b>(c)</b> Explain pneumatic circuits in tool handling in CNC Machine Tools. .                                       | <b>07</b> |
| <b>OR</b>  |                                                                                                                      |           |
| <b>Q.5</b> | <b>(a)</b> Scope of low cost Automation.                                                                             | <b>03</b> |
|            | <b>(b)</b> Explain trouble shooting and remedies in pneumatic system.                                                | <b>04</b> |
|            | <b>(c)</b> Explain the working of the hydraulic circuit for Shaping Machine.                                         | <b>07</b> |

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