

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 7 – EXAMINATION – SUMMER 2026

Subject Code: 2171912

Date: 03/06/2026

Subject Name: Oil Hydraulics and Pneumatics

Time: 02:30 PM TO 05:00 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.**

- Q.1**
- (a) Give difference between hydraulic and pneumatic system. **03**
 - (b) Explain basic components of pneumatic system with general layout diagram. **04**
 - (c) Draw and explain a simple hydraulic circuit for controlling single acting cylinder. **07**
- Q.2**
- (a) Write desirable properties of hydraulic oil. **03**
 - (b) Explain contamination and filtration in hydraulic system. **04**
 - (c) Explain construction and working of FRL unit with neat diagram. **07**
- OR
- (c) Explain classification and applications of hydraulic fluids. **07**
- Q.3**
- (a) Give classification of hydraulic pumps and explain positive displacement pump. **03**
 - (b) Explain working of gear pump with neat sketch. **04**
 - (c) Explain control of a double-acting hydraulic cylinder by 4/3 direction control valve with circuit diagram. **07**
- OR
- Q.3**
- (a) Explain ‘cushioning’ of pneumatic cylinder. **03**
 - (b) Explain construction and working of axial piston pump. **04**
 - (c) How speed control is achieved in Pneumatic systems? Explain fixed flow and variable flow control valve. **07**
- Q.4**
- (a) List different types of accumulator. Explain any one in detail. **03**
 - (b) Explain radial piston pump with neat sketch. **04**
 - (c) Design a hydraulic circuit using sequence valve for two cylinders. **07**
- OR
- Q.4**
- (a) Explain fluid reservoir used in a power hydraulic system. **03**
 - (b) Classify flow control valves and explain any one in detail. **04**
 - (c) Explain working of counterbalance valve with application. **07**
- Q.5**
- (a) Explain the principle of regenerative circuit. **03**
 - (b) Explain various types of automation used in industry. **04**
 - (c) Sketch & explain pneumatic circuit by using quick exhaust valve. **07**
- OR

Q.5	(a) Draw and explain logic OR valve for pneumatic system.	03
	(b) Explain cascade method in pneumatic circuits.	04
	(c) Draw and explain meter-in and meter-out circuits.	07
