

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024****Subject Code:2171912****Date:28-05-2024****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) Draw the general layout of Hydraulic system. Explain the function of any two components. **03**
- (b) Write application of Hydraulic system & Pneumatic System. **04**
- (c) Classify the pumps used for the hydraulic system and explain external and internal gear pump with neat sketches. **07**
- Q.2** (a) What are the factors to be considered for selection of hydraulic fluid? **03**
- (b) Write a note on Biodegradable hydraulic fluids. **04**
- (c) With the help of sketch explain different locations of filters in hydraulic system. **07**
- OR**
- (c) Write a short note on the Quick Exhaust valve. **07**
- Q.3** (a) Define following terms referred in filtration: (1) Mesh number (2) Silt index (3) Beta ratio. **03**
- (b) Discuss control techniques used in Direction Control Valve. **04**
- (c) What is the function of Pressure Reducing Valve? sketch & explain with neat sketch the working of pressure reducing valve **07**
- OR**
- Q.3** (a) Explain non-return valve with suitable sketch. **03**
- (b) Sketch & explain shuttle valve construction & it's working. **04**
- (c) Explain hydrostatic transmission system with neat sketch and list its merits and demerits. **07**
- Q.4** (a) What is the influence of following properties of hydraulic fluid on hydraulic systems? **03**
- (i) Bulk modulus (ii) Pour point (iii) Demulsibility
- (b) What are the causes and effects of heat generation in hydraulic system? **04**
- (c) What is FRL unit? Explain any two component of FRL unit with schematic diagram. **07**
- OR**
- Q.4** (a) Why purification of compressed air is necessary? **03**
- (b) State different types of Accumulator. Explain one in detail. **04**
- (c) Explain the significance of heating and cooling devices in oil hydraulic power transmission systems. **07**
- Q.5** (a) Draw the standard symbols of adjustable pressure relief valve, adjustable pressure reducing valve and pressure compensated flow control valve. **03**
- (b) Draw and explain sequencing circuit to operate two double acting cylinder using limit switch. **04**

- (c) Explain the significance of different components present in a Time delay valve. Explain one practical application of the time delay valve. **07**

OR

- Q.5** (a) Discuss the role of automation in pneumatic and hydraulic control system. **03**
(b) State reservoir accessories and their functions. **04**
(c) Enlist different types of hydraulic cylinders. What is cushioning assembly, explain using schematic diagram. **07**
