

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI(NEW) – EXAMINATION – SUMMER 2019****Subject Code:2162004****Date:14/05/2019****Subject Name:Hydraulic & Pneumatic Systems****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.

- Q.1** (a) Explain applications of pneumatic system. **03**
 (b) Briefly explain elements of power pack in hydraulic system. **04**
 (c) Enlist the selection criteria for hydraulic pump? **07**
- Q.2** (a) What is the significance of pressure relief valve in hydraulic system? **03**
 (b) Enlist and explain the functions of hydraulic fluid. **04**
 (c) What is the significance of pressure relief valve in hydraulic system? Explain construction and working with neat sketch. **07**
- OR**
- (c) What is the significance of FRL unit in pneumatic system? Explain construction and working of lubricator with neat sketch. **07**
- Q.3** (a) With the help of schematic diagram explain construction and working of shuttle valve. **03**
 (b) Write a short note on Bio-degradable hydraulic fluid. **04**
 (c) What are the advantages of High Water Content Fluid? **07**
- OR**
- Q.3** (a) What are the effects of contaminants on direction control valve? **03**
 (b) Explain different types of hydraulic filters. **04**
 (c) What are the additives used to enhance the properties of High Water Content Fluid? **07**
- Q.4** (a) Explain Overlap and Underlap in hydraulic valves. **03**
 (b) What are the pros and cons of positive displacement pumps? **04**
 (c) With schematic diagram explain construction and working of wobble plate axial piston pump. **07**
- OR**
- Q.4** (a) Enlist functions of hydraulic reservoir. **03**
 (b) Explain significance of pressure reducing valve with neat sketch. **04**
 (c) Explain construction and working of closed centre DCV with the help of neat sketch. **07**
- Q.5** (a) Explain functions of accumulator in hydraulic system. **03**
 (b) Classify hydraulic cylinders according to their construction. **04**
 (c) Design a pneumatic system to control double acting cylinder using 5/2 Air-Air valve. The piston should extend when two push buttons are pressed simultaneously and it should retract automatically after specified time delay. If the emergency push button is pressed than the piston should retract immediately. **07**
- OR**
- Q.5** (a) Differentiate between displacement and flow-rate of hydraulic pump. **03**
 (b) Classify hydraulic motors according to their construction. **04**
 (c) Design and explain regenerative hydraulic circuit. **07**
