

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VIII (OLD) - EXAMINATION – SUMMER 2017****Subject Code:180204****Date:04/05/2017****Subject Name: Automotive Hydraulics & Pneumatics (Department Elective-II)****Time:10:30 AM to 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.

Figures to the right indicate full marks

- Q.1** (a) Draw and explain in brief different elements of hydraulic systems. **07**
 (b) Draw symbols for following hydraulic elements. **07**
- a) Single acting cylinder with spring return
 - b) Non Return flow control Valve
 - c) Sequence Valve
 - d) Check Valve
 - e) 3/2 Direction Control Valve
 - f) Uni-Directional Motor
 - g) Shuttle Valve
- Q.2** (a) Explain with neat sketch Regenerative Hydraulic Circuit. **07**
 (b) a) Through a hydraulic pipe of 15 mm diameter oil flows at a rate of 12 litres/minute. Find out the flow velocity. **04**
 b) Calculate the hydrostatic pressure at the bottom of a hydraulic oil container filled with oil (density = 800 kg/m³) up to height of 600 mm. **03**
- OR**
- (b) a) An 8 L sample of oil is compressed in a cylinder until pressure increases from 0.7 to 2.7 MPa. If the bulk modulus equals 80 MPa, find the change in the volume of oil. **04**
 b) Define the terms: Specific Density, Specific Weight and Specific Gravity. **03**
- Q.3** (a) Explain with a neat sketch the working of gear pump and its applications. **07**
 (b) Draw and explain constructional features of a 5/3-direction control valve of linear type along with its graphical symbol. **07**
- OR**
- Q.3** (a) Explain properties of hydraulic oil in detail. **07**
 (b) Draw meter in and meter out circuit with symbols. **07**
- Q.4** (a) Differentiate between open and closed loop hydraulic circuits. **07**
 (b) Write short note on Hydraulic power steering with neat sketch. **07**
- OR**
- Q.4** (a) What is servo valve? How does it work? Describe mechanical – hydraulic servo valve. **07**
 (b) Draw a hydraulic circuit diagram of a hydraulic system having a double acting cylinder which has a rapid approach speed, then a slow feed motion and at the end of the stroke the cylinder returns rapidly. **07**
- Q.5** (a) Describe with neat sketch Quick Exhaust Valve with application. **07**
 (b) List common causes of pneumatic system breakdown and suggest remedies. **07**

OR

- Q.5 (a)** Explain following Logic Gates used in Pneumatic Circuit with proper application. **07**
- a) NOT Gate
 - b) OR Gate
 - c) AND Gate
- (b)** How can you classify the pneumatic actuators? How do hydraulic actuators differ from pneumatic actuators? **07**
