

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER- • EXAMINATION – WINTER 2013

Subject Code: 153401**Date: 27/11/2013****Subject Name: Applied Hydraulics and Pneumatics****Time: 10:30am-01:00pm****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) (i) Define the term fluid power. What are applications, advantages of fluid power **03**
- (ii) What are the properties require for Hydraulic systems with explanation. **04**
- (b) (i) What are the losses in pipe, valves and fittings? Explain briefly Which equation is suitable to get it solve. **04**
- (ii) What are the important conclusion resulting from Reynolds's experiment? **03**
- Q.2** (a) (i) What is working principle of pump. Classify the types of pumps. **04**
- (ii) What is meant by the pressure rating of a positive displacement pump? **03**
- (b) (i) What are the types of dynamic pumps? Explain with figure. **04**
- (ii) Why does the rod of a double-acting cylinder retract at a greater velocity than extends for the same input flow rate? **03**
- OR**
- (b) (i) Explain with neat sketch construction and working of Internal gear pump and Gerotor pump. **04**
- (ii) How is torque developed in a vane motor? Explain with details. **03**
- Q.3** (a) (i) What is purpose of pressure relief valve, direction control valve and flow control valve? **03**
- (ii) Explain how the four-way directional control valve operates. **04**
- (b) (i) How does an unloading valve differ from a sequence valve in mechanical construction? **04**
- (ii) Explain how the electrical control solenoid valve operates. **03**
- OR**
- Q.3** (a) (i) Explain the operational features of the pressure-compensated flow control valve. **04**
- (ii) Name the three major classifications of gas-loaded accumulators. Give one advantage of each classification. **03**
- (b) What is intensifier? Explain intensifier circuit with applications. **07**
- Q.4** (a) (i) Explain the functions of – **04**
1. Lubricator Unit
2. Air control valves
- (ii) How do pneumatic actuators differ from hydraulic actuators? **03**
- (b) (i) Explain in brief Quick exhaust valves, **03**
- (ii) What are the pneumatic actuators? Explain any one. **04**
- OR**
- Q.4** (a) Explain and draw sequential circuit design for any simple applications using cascade method. **07**
- (b) Explain and draw Penumo-hydraulic circuit for an application. **07**
- Q.5** (a) (i) How does a PLC differ from a general purpose computer? **03**
- (ii) What are electro hydraulic servo systems? **04**
- (b) (i) What are the applications in fluid power control for SCADA. **04**

(ii) Explain briefly hydro Mechanical servo systems. **03**

OR

Q.5 (a) What do you mean by Electro Hydraulic Pneumatic logic circuits? Explain with any one circuit. **07**

(b) What are the failure and troubleshooting problems in Hydraulic circuit? **07**
