## **GUJARAT TECHNOLOGICAL UNIVERSITY** BE - SEMESTER- IV(NEW) EXAMINATION – SUMMER 2015

## Subject Code: 2142302Date:01/06/2015Subject Name: INDUSTRIAL HYDRAULICS AND PNEUMATICSTime: 10:30am-1.00pmInstructions:

## 1 Attornt all a

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.

Q.1 (a) Fill the following blanks
(1) The study of hydraulics deals with the use and characteristics of \_\_\_\_\_\_
(2) The input component of the hydraulic power transmission system is called a \_\_\_\_\_\_ and the output component is called an \_\_\_\_\_\_\_
(3) A tank volume of hydraulic system is generally kept \_\_\_\_\_\_ times more

- than the pump drawing capacity per minute.
  (4) \_\_\_\_\_\_ seal is used to prevent leakage of oil between the parts that are moving with respect to one another.
- (5) In check valve ,the pressure required to overcome the spring tension and open the valve is called \_\_\_\_\_\_
- (6) Unit of work done is \_\_\_\_\_

(7) \_\_\_\_\_\_ valve permit free flow in one direction and block return flow until open by pilot signal.

- (b) Compare: Hydraulics System with Pneumatics System
   Q.2 (a) Draw symbols of the following:

   (1) Line, Passing (2) Cylinder, Double Acting (3) Check Valve (4) Temperature Gauge (5) Accumulator, Spring loaded (6) Two way valve (7) Filter
  - (b) Explain Pilot-operated Check Valve with neat sketch.
  - (b) Explain Pressure compensated flow control valve with neat sketch.
- Q.3 (a) Short Note: (1) Reservoir (2) Filters & Strainers.
   (b) Give classification of Pump. Explain about Gear pump in detail with neat sketch.
   OR
   O.3 (a) What is Accumulator? List the types of Accumulator and Explain any one type
- Q.3 (a) What is Accumulator? List the types of Accumulator and Explain any one type 07 of Accumulator with application of it in Injection molding system.
   (b) Give detail classification of Air Compressor. Explain principle, construction and 07
  - working of single stage Air compressor.
- Q.4(a)Draw and explain Deceleration circuits.07(b)List and explain basic properties required of a good hydraulic fluid.07OROR07Q.4(a)What is Servo valve? Explain Mechanical Servo valve in detail.07
- (a) What is Servo valve: Explain Mechanical Servo valve in detail.
   (b) List the types of Pressure Control valve. Explain Balanced Piston type Pressure 07 control valve with neat sketch.
- Q.5 (a) Define and explain Pascal's law in detail with suitable example. 07 Solve: In a hydraulic jack work done by the pump side piston is 2000 kg.cm. The volume of the oil displaced by the 200 kg forced applied on pump side is 20 cm<sup>3</sup>. Calculate the force developed on the jack piston if the area of the jack side piston is 10 cm<sup>2</sup>.

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<b>(b</b> )	Give detail classification of directional control valve. Explain construction and	07
	working of Two way valve with neat sketch.	

## OR

- Explain principle & application of Bernoulli's theorem. List the types of Intensifiers. Explain single stage pressure Intensifiers in detail. Q.5 07 **(a)** 
  - **(b)** 07

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