

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019****Subject Code: 2171912****Date: 26/11/2019****Subject Name: Oil Hydraulics & Pneumatics****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) Draw the symbol of (1) Bi-directional variable displacement pump (2) Pilot operated pressure relief valve (3) 4/3 directional control valve. **03**
- (b) List basic electrical devices used in hydraulic system. Explain working of pressure switch with neat sketch. **04**
- (c) What are the functions of hydraulic fluids? List different types of hydraulic fluids. Explain high water content fluid with its merits and demerits. **07**
- Q.2** (a) Define following terms referred in filtration: (1) Mesh number (2) Silt index (3) Beta ratio. **03**
- (b) List different types of piston pump. Explain stationary cylinder radial piston pump with neat sketch. **04**
- (c) Classify actuators. Explain construction and working of double acting linear actuator with neat sketch. **07**
- OR**
- (c) Explain hydrostatic transmission system with neat sketch and list its merits and demerits. **07**
- Q.3** (a) Compare positive displacement pump and non-positive displacement pump. **03**
- (b) Compare external gear pump and internal gear pump. Show its operating characteristics. **04**
- (c) What are the different types of vane pumps? Explain balanced vane pump with neat sketch. **07**
- OR**
- Q.3** (a) Draw a circuit for control of single acting spring return hydraulic cylinder. **03**
- (b) Explain Hydraulic time delay valve circuit with neat sketch. **04**
- (c) Draw and explain a hydraulic circuit for a punching operation using intensifier. **07**
- Q.4** (a) Classify flow control valves. **03**
- (b) Draw the neat sketch of check valve and sliding spool 2/2 direction control valve. **04**
- (c) What are the functions of hydraulic accumulator? Explain gas filled accumulator with neat sketch. **07**
- OR**
- Q.4** (a) Classify pressure control valves. **03**
- (b) Compare pressure relief valve and unloading valve. **04**
- (c) What are the advantages of pilot operated valve over simple valve? Explain pilot operated reducing valve with neat sketch. **07**

- Q.5 (a) Draw a circuit for operation of uni-directional motor using 3/2 direction control valve. 03  
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- (b) Explain basic pneumatic system with neat sketch and show all the components on sketch. 04
- (c) Explain working of air pilot control double acting cylinder with circuit diagram. 07

**OR**

- Q.5 (a) List advantages and disadvantages of automation in fluid power systems. 03
- (b) Compare pneumatic and hydraulic system. 04
- (c) Draw and explain sequencing circuit to operate two double acting cylinder using limit valves. 07

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