Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2018**

**Subject Code: 2171912** **Date: 19/11/2018**

**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.**

| | | | MARKS |
|---|---|---|---|
| **Q.1** | **(a)** | Draw the general layout of hydraulic system. Explain the function of each component. | **03** |
| | **(b)** | Define Control Valve. List the different types of control valves. | **04** |
| | **(c)** | Give the classification of Pumps. Sketch & Explain working of Rotary Vane type of pump. | **07** |
| **Q.2** | **(a)** | Write application of Hydraulic system & Pneumatic system. | **03** |
| | **(b)** | Sketch & Explain the working of Ge- rotor pump with neat sketch. | **04** |
| | **(c)** | Give ISO/ANSI symbol of following.<br>1. Hydraulic motor<br>2. Single acting cylinder with spring return actuator<br>3. 3/2 DCV<br>4. Pressure relief Valve<br>5. Variable flow control valve<br>6. Spring loaded accumulator<br>7. Air filter | **07** |
| | | **OR** | |
| | **(c)** | Explain working of axial in line swash plate pump with neat sketch. | **07** |
| **Q.3** | **(a)** | Draw speed controlled actuator, Meter- out circuits for DAC for extension. | **03** |
| | **(b)** | Draw general layout of pneumatic system & write function of each components. | **04** |
| | **(c)** | What is the function of pressure Reducing Valve? sketch & explain with neat sketch the working of pressure reducing valve | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Sketch & explain Counter Balance valve construction & its working. | **03** |
| | **(b)** | List the Power loss in flow control circuits & explain in detail. | **04** |
| | **(c)** | Explain One Industrial application of hydraulic circuit with neat sketch. | **07** |
| **Q.4** | **(a)** | Explain 4/3 sliding spool direction control valve working. | **03** |
| | **(b)** | Write a note on thermocouple type temperature sensor | **04** |
| | **(c)** | Bleed off Circuits – sketch & explain its working. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | List the electric devices used in the control of fluid power system. | **03** |
| | **(b)** | What do you mean Automation? Give classification of Automation. | **04** |
| | **(c)** | Sketch & explain Pneumatic Circuit using Quick Exhaust valve. | **07** |
| **Q.5** | **(a)** | What is an actuator? Draw hydraulic system operating double acting actuator with 3/2 DCV | **03** |

| | | | |
|---|---|---|---|
| | **(b)** | Describe Working of twin pressure valve with neat sketch & draw its symbol | **04** |
| | **(c)** | Draw Symbol of filter & explain the working of by-pass type filter | **07** |

**OR**

| | | | |
|---|---|---|---|
| **Q.5** | **(a)** | Explain Cascading Method for sequencing. | **03** |
| | **(b)** | If diameter of piston is 60 mm, diameter of piston rod is 10 mm, & air pressure is 100 $N/mm^2$, what will be the force in advance stroke & return stroke. | **04** |
| | **(c)** | Draw Pneumatic circuit for operating DAC by 4/3 DCV. | **07** |

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