

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2171912

Date: 02/05/2017

Subject Name: Oil Hydraulics & Pneumatics(Department Elective - I)

Time: 02.30 PM to 05.00 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) (i) Explain Brahma's press principle with the help of neat sketch. **03**
(ii) Draw the symbols for following hydraulic components according to ISO:
(A) Double acting cylinder with cushioning on both sides (B) Lever operated, **04**
spring returned, 3/2 DCV (C) Pilot operated check valve (D) Sequence valve.
(b) Name and explain the properties of hydraulic oil used in hydraulic circuit. **07**
- Q.2** (a) List different types of accumulators and describe functioning of any two with **07**
the help of neat sketch.
(b) Classify hydraulic pumps. Explain the principle of working of a positive **07**
displacement pump.
- OR**
- (b) Explain the working of balanced vane pump with the help of neat sketch. **07**
- Q.3** (a) Show the construction of double acting cylinder with labeled diagram. **07**
(b) Draw and explain the function and principle of open loop system servo **07**
mechanism.
- OR**
- Q.3** (a) Explain the working of Internal gear pump with the help of neat sketch. **07**
(b) Explain the working of "Pilot operated, spring centered 4-port, 3-position **07**
direction control (spool) valve" with the help of neat sketch.
- Q.4** (a) List different pressure control valves giving its application. Explain construction and **07**
working of any one in detail with the help of neat sketch.
(b) Draw and explain the working of 'Sequential circuit' for sequential operation of **07**
two - double acting cylinders, using two sequence valves.
- OR**
- Q.4** (a) Compare advantages and disadvantages of pneumatic and hydraulic system? **07**
(b) Draw and explain the working of 'Regenerative circuit' for achieving same **07**
speed of double acting cylinder in both strokes.
- Q.5** (a) Design a circuit to control speed of a double acting pneumatic cylinder in both **07**
the strokes and explain its working.
(b) Explain construction & working of pressure regulator used in pneumatic **07**
system.
- OR**
- Q.5** (a) With the help of neat sketch, explain the principle and working of Shuttle valve **07**
(OR gate) and Twin Pressure valve (AND gate).
(b) What is functional diagram in pneumatic circuit? Explain Movement diagram, **07**
Travel-Time diagram and Position-step diagram with the help of an example.
