

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2022****Subject Code:2171912****Date:03/06/2022****Subject Name:Oil Hydraulics and Pneumatics****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.
4. Simple and non-programmable scientific calculators are allowed.

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|------------|-----|---|-----------|
| Q.1 | (a) | Give the classification of accumulators with mentioning application of each. | 03 |
| | (b) | Explain construction and operation of pressure relief valve with neat sketch. | 04 |
| | (c) | Explain spool type 4/3 direction control valve with neat sketch. | 07 |
| Q.2 | (a) | What are the basic steps of circuit design? | 03 |
| | (b) | Draw the symbols of 1. Pressure reducing valve and 2. Pressure relief valve. Also give the function of each. | 04 |
| | (c) | Explain with sketch an internal gear pump. | 07 |
| OR | | | |
| | (c) | Draw the symbol of 1. Unidirectional variable displacement pump, 2. Unloading valve, 3. 4/3 DCV, 4. Variable restriction flow control valve, 5. Time delay valve, 6. Quick exhaust valve, 7. Single acting cylinder with spring return. | 07 |
| Q.3 | (a) | Give the difference between hydraulic system and pneumatic system. | 03 |
| | (b) | Mention various properties of hydraulic Oil used in hydraulic system | 04 |
| | (c) | Explain various hydraulic actuators. | 07 |
| OR | | | |
| Q.3 | (a) | Name the different types of filters and Explain any one of it. | 03 |
| | (b) | Draw the general layout of pneumatic system and also give the function of each component. | 04 |
| | (c) | Explain FRL unit used in pneumatic system. | 07 |
| Q.4 | (a) | What is meant by positive displacement pump? Classify the same. | 03 |
| | (b) | Explain briefly shuttle valve. | 04 |
| | (c) | Explain with neat sketch regenerative hydraulic circuit. | 07 |
| OR | | | |
| Q.4 | (a) | Explain briefly meter in circuit. | 03 |
| | (b) | Give the importance and classification of automation. | 04 |
| | (c) | List down common causes of failure of pneumatic system and suggest remedy for the same. | 07 |
| Q.5 | (a) | Give the name of different types of electrical devices used in hydraulic systems. | 03 |
| | (b) | Give the difference between hydrostatic and hydrodynamic system. | 04 |
| | (c) | Explain FRL unit used in pneumatic system. | 07 |
| OR | | | |
| Q.5 | (a) | What are basic the requirements of control valves? | 03 |
| | (b) | Give advantages and disadvantages of screw pump. | 04 |
| | (c) | Explain working of sequence valve with sketch. | 07 |
