

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VII (NEW) EXAMINATION – WINTER 2021****Subject Code:2171912****Date:25/11/2021****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.

		MARKS
Q.1	(a) What are the major advantages of oil hydraulic system?	03
	(b) State and describe four important properties of hydraulic fluids.	04
	(c) What is the significance of center condition in 4/3 DCV? Which center condition is used in which application, explain each in detail.	07
Q.2	(a) Why positive displacement pumps are used in hydraulic systems.	03
	(b) Explain briefly fire resistant fluids.	04
	(c) What is the service unit in pneumatic system? Why is it provided? Clearly mention functions of each unit of service unit. Draw detailed and simplified symbols of service unit.	07
OR		
	(c) What is the purpose of pressure relief valve? How does a pressure relief valve works? With the help of neat diagram, explain the working of pressure relief valve.	07
Q.3	(a) Why correct rating of a hydraulic filter is essential in hydraulic system?	03
	(b) Construction and working of time delay valve of pneumatic systems.	04
	(c) Draw and explain Meter-in, Meter out and By-pass speed control circuits. Also differentiate among them.	07
OR		
Q.3	(a) List out various accessories of reservoirs.	03
	(b) Differentiate between a hydrostatic and hydrodynamic system.	04
	(c) State different types of Accumulators. Give their application. Explain one in detail. Which gas is used in gas charged accumulator? Why not oxygen?	07
Q.4	(a) Sketch & explain shuttle valve construction & its working.	03
	(b) What do you mean Automation? Give classification of Automation.	04
	(c) Give the classification of Pumps. Sketch & Explain working of internal gear pump.	07
OR		
Q.4	(a) Explain broad applications of pneumatic system.	03
	(b) Classify and explain hydraulic cylinders according to construction.	04
	(c) Explain the difference between regenerative and sequence control circuit for hydraulic control with neat sketch and suitable example.	07
Q.5	(a) Give difference between throttle valve and flow control valve.	03
	(b) Write a short note on Bio-Degradable hydraulic oils.	04
	(c) What is the purpose of filter in hydraulic system? Where it is located in hydraulic circuit? What is the significance of location of filter?	07

OR

- Q.5** (a) Differentiate between a seat type and spool type DC valve. Which of these two types of valves are widely used? Why? **03**
- (b) Explain construction and working of spring loaded check valve using neat schematic diagram. **04**
- (c) Design and explain a pneumatic circuit to control double acting cylinder using 5/2 air-air operated valve. The cylinder should extend when two push button are press simultaneously. The cylinder should retract automatically after extension or when emergency push button is pressed. **07**
