Seat No.:	Enrolment No

## GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER II (NEW) - • EXAMINATION - SUMMER 2016

Subject Code: 2724701 Date: 24/05/2016 **Subject Name: Advance Oil Hydraulic and Pneumatic Systems** 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 Explain the following properties of hydraulic fluid: 07 (a) (1) Viscosity (2) System Compatibility (3) Bulk Modulus (4) Flash Point (5) Foaming Tendency (6) Specific Gravity (7) Volatility. Compare water with petroleum oil. **07 (b)** What is pressure relief valve? Explain the significance of pressure relief valve 07 **Q.2** (a) with neat sketch. What are the advantages of high water content fluid? **07 (b) (b)** Enlist the additives used in high water content fluid with their functions. 07 Q.3 With neat sketch explain working and construction of fixed displacement 07 (a) unbalanced vane pump. Explain functions of Hydraulic reservoir with neat sketch. **(b)** 07 0.3 With neat sketch explain working and construction of internal gear pump. 07 (a) What is the significance of hydraulic accumulator? Explain the functions of **07 (b)** hydraulic accumulator. 0.4 Explain different types of filters used in hydraulic system with their location. **07** (a) With neat sketch explain single stage electro-hydraulic servo valve. **(b)** 07 What is FRL unit? Explain working and construction of lubricator with neat sketch. **Q.4** (a) **07** With neat sketch explain two stage electro-hydraulic servo valve. **(b)** 07 0.5 With neat sketch explain working and construction of twin pressure valve and 07 (a) quick exhaust valve. **07** Design a hydraulic circuit to control speed of forward stroke of a double acting **(b)** cylinder using lever operated 4/2 direction control valve. It should retract with maximum speed. OR (a) With neat sketch explain 4/3 direction control valve. **07 Q.5** Design a pneumatic circuit to control a double acting cylinder using double 07 **(b)** pilot 5/2 direction control valve. The piston should extend when either of two push button valve is pressed and it should retract after preset time delay. \*\*\*\*\*