

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- VIth SEMESTER–EXAMINATION – MAY- 2012****Subject code: 162004****Date: 17/05/2012****Subject Name: Hydraulics and pneumatic Systems****Time: 10:30 am – 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.
4. Use of their own charts and tables are allowed.

Q.1	(a)	Stating the principle of hydraulic fluid power, classify the fluid power system. Also discuss the advantages and disadvantages of pneumatic and hydraulic systems in detail.	07
	(b)	Draw line sketch of stages of air preparation for pneumatic system and discuss each component in detail.	07
Q.2	(a)	Compare air and oil as fluid for the power generation and discuss its desirable properties. Also list out the types of hydraulic oil available.	07
	(b)	Draw the symbols for Hydraulic systems (1) Pressure compensated Flow control valve (2) 5/3 pilot operated direction control valve (3) Unloading type pressure control valve.(4) 3/2 Normally open DC valve (5)Accumulator (6) a hydraulic motor with drain (7) Spring return cylinder	07
		OR	
	(b)	Classify the pumps used for the hydraulic system and explain external and internal gear pump with neat sketches.	07
Q.3	(a)	Enlist the types of control valves used for hydraulic system and explain types of pressure control valves in detail with neat sketch.	07
	(b)	Explain the working principle of hydraulic motor. State the types of hydraulic motors. Also discuss the selection criteria for hydraulic motors.	07
		OR	
Q.3	(a)	Draw a line sketch of hydraulic circuit containing double acting cylinder, 5/3 lever operated DC valve. Check valve, unloading valve.	07
	(b)	Explain the difference between regenerative and sequence control circuit for hydraulic control with neat sketch and suitable example.	07
Q.4	(a)	Explain in short the actuators used for pneumatic control systems. Also explain detail of components on simple double acting cylinder with neat line sketch and state the function of each component.	07
	(b)	List out the control valves used for pneumatic circuit and write a note on Direction control valve with detail constructional details.	07
		OR	
Q.4	(a)	What is air service unit? Explain its working principle in detail with neat sketch. Also draw a symbol for the same.	07
	(b)	Write a short note on (1) the Quick Exhaust valve (2)Time delay shuttle valve.	07

Q.5	(a)	Discuss the role of automation in pneumatic and hydraulic control systems.	07
	(b)	Draw the line diagram of pneumatic circuit containing single acting cylinder, 3/2 push button operated DC valve, flow control valve,	07
		OR	
Q.5	(a)	State the types of air filters and explain working of any one with neat sketch.	07
	(b)	List the applications of pneumatic and Hydraulic control systems. Also explain how the hydraulic system is used in machine tool application with suitable example.	07
