## **GUJARAT TECHNOLOGICAL UNIVERSITY** BE - SEMESTER-VIII • EXAMINATION – SUMMER 2013

		DE - SEMIESTER VIII EARIMINATION SOMMER 2015	
Sı	ubject	t Code: 180204 Date: 09/05/2013	
Su Ti In	ubject ime: 1 structio	t Name: Automotive Hydraulics and Pneumatics 10:30 am TO 01:00 pm Total Marks: 70 ons:	)
	1 2 3	<ul> <li>Attempt all questions.</li> <li>Make suitable assumptions wherever necessary.</li> <li>Figures to the right indicate full marks.</li> </ul>	
Q.1	<b>(a)</b>	<ul><li>(i) State the basic advantages of hydraulic system over mechanical system.</li><li>(ii) What precautions are to be taken to save oil from contamination?</li></ul>	07
	(b)	<ul> <li>(i) Through a hydraulic pipe of 15 mm diameter flow oil at a flow rate of 12 litre/min. Find out the flow velocity.</li> </ul>	07
		(ii) Calculate the hydrostatic pressure at the bottom of a hydraulic oil container filled with oil ( $= 0.8 \text{ Kg/cm}^3$ ) up to a height of 800 mm.	
Q.2	<b>(a)</b>	Draw and explain constructional features of a 5/3-direction control valve of linear type along with its graphical symbol.	07
	<b>(b)</b>	Give Hydraulic/Pneumatic Symbol for following:	07
		1. Double acting cylinder2. 3/2 directional control valve normally closed	
		3. Pressure relief valve 4. Non return valve	
		5. Pressure regulator 6. Quick Exhaust valve	
		/. Pressure regulator	
	<b>(b)</b>	UR What types of fluids are evailable for hydraulis system? Europic two of them	07
03	(D) (a)	what types of huids are available for hydraulic system? Explain two of them.	07
Q.3	(a) (b)	Explain the construction and operation of a two stage electro hydraulic servo valve. Explain the working principle of serew compressor and state its advantages over	07 07
		neciprocating compressor.	
Q.3	(a)	Explain the working principle of external gear pump and determine its performance measures	07
	(b)	Explain the operation of a check valve with a neat sketch	07
Q.4	(a)	With neat sketch explain the operations of a pressure-reducing valve. Sketch its graphical symbol	07
	<b>(b)</b>	With a neat sketch explain the construction and operation of pilot operated sequence valve.	07
		OR	
Q.4	(a)	Draw a hydraulic circuit diagram of a pneumatic system having a double acting cylinder which has a rapid approach speed, then a slow feed motion and at the end of stroke the cylinder returns rapidly.	07
	(b)	Explain the various mechanics of hydraulic mounting.	07
Q.5	(a)	Explain different pneumatic sensors used in machine tool.	07
	<b>(b)</b>	Enlist the various faults, probable causes and also their remedial action for the	07
		following pneumatic system components	
		1. Compressor 2. Air cylinder 3. FRL unit 4. Pipe line	
		OR	
Q.5	<b>(a)</b>	Describe hydro-pneumatic air suspension with neat diagram.	07
	<b>(b)</b>	Explain following fluidic gate	07

(a) FLIP ó FLOP (b) NOR Gate

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