Model Question Paper 2 with effect from2022-23 (CBCS Scheme)

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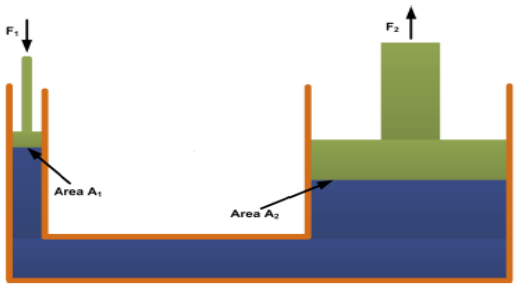
Fourth Semester B.E. Degree Examination
Hydraulics and Pneumatics

TIME: 03 Hours **Max. Marks: 100**

Note: 01.Answer any FIVE full questions, choosing at least ONE question from each MODULE.

		Module -1		*Bloom's Taxonomy Level	Marks
Q. 01	**a**	Explain different components of Hydraulic power systems with a neat sketch.	CO 1	L2	8
	b	Differentiate positive displacement and non-positive displacement pumps.	CO 2	L2	4
	c	Derive the equation for Volumetric Displacement of fluid and Volumetric efficiency in Vane pump respectively with neat Diagram.	CO 1	L3	8
		OR			
Q. 02	**a**	Describe the advantages, Limitations and Applications of Hydraulic Power systems	CO 1	L2	8
	b	Explain the construction and working of Radial Piston Pump with Neat Diagrams.	CO 2	L2	4
	c	Consider the arrangement shown in fig1. The piston diameter of small cylinder is 25 mm and the piston diameter of the large cylinder is 100 mm. The force required at the large cylinder piston is 2000 N. Calculate: i) The amount of force applied at the small cylinder piston. ii) The distance the large piston will move if the small piston moves 100 mm.  Figure 1	CO 1	L3	8
		Module-2			
Q. 03	**a**	Describe the construction and working of gear motor with the neat diagram	CO 2	L2	10
	b	A hydraulic motor has a volumetric displacement of 125 cm^3 and a pressure rating of 150 bars. It receives a theoretical flow of oil of 0.0015 m^3/s from a pump. Find the motor: a) Speed b) theoretical torque c) theoretical power.	CO 3	L3	10

		OR			
Q. 04	**a**	Illustrate the working principle of twin pressure valve and shuttle valve	CO 2	L2	10
	b	A hydraulic motor has a 82cm^3 Volumetric Displacement. If it has a pressure rating of 70 bars and receives oil from a 0.0006 m^3/s as theoretical flow rate of the pump, find (i) Speed (ii) Theoretical Torque (iii) Theoretical Power	CO 3	L3	10
		Module -3			
Q. 05	**a**	Describe the Desirable properties of hydraulic fluids.	CO 2	L2	10
	b	Design a hydraulic circuit to control the Speed of Hydraulic Cylinder with explanation.	CO 4	L3	10
		OR			
Q. 06	**a**	With a neat diagram explain the components and functions of a reservoir used in hydraulic system.	CO 2	L2	10
	b	What is accumulator? Explain the application of accumulator with any hydraulic circuit	CO 4	L2	10

		Module-4			
Q.07	**a**	With a neat block diagram explain different components of pneumatic system	CO 1	L2	10
	b	Design pneumatic circuits for Supply air throttling and Exhaust air throttling	CO 4	L3	10
		OR			
Q.08	**a**	Explain Advantages, Limitations and Applications of pneumatic System	CO 1	L2	10
	b	Write a short note on a) Air Filter b) Air Regulator c)Air Lubricator	CO 4	L2	10
		Module-5			
Q.09	**a**	Design a pneumatic circuit, to illustrate the control of extension of single acting cylinder using OR logic gates.	CO 3	L3	10
	b	Design the pneumatic circuit for cylinder sequencing operation using two cylinders with motion control diagram.	CO 3	L3	10
		OR			
Q.10	**a**	Design a pneumatic circuit, to illustrate the control of extension of single acting cylinder using AND logic gates.	CO 3	L3	10
	b	With a neat hydraulic circuit explain the operation of cylinder synchronizing operation.	CO 3	L2	10

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