MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

MLRS

IV B.Tech I Sem Regular End Examination, Nov/Dec 2022
Fluid Power Systems (PE-IV)
(MECH)

Time: 3 Hours.   **Max. Marks: 70**

Note: 1. Question paper consists: Part-A and Part-B.
      2. In Part – A, answer all questions which carries 20 marks.
      3. In Part – B, answer any one question from each unit.
       Each question carries 10 marks and may have a, b as sub questions.

PART- A
(10*2 Marks = 20 Marks)

1.	a)	What is a fluid? What are the functions and characteristics of hydraulic fluids?	2M	CO1	BL1
	b)	Give the specification of two typical mineral-based hydraulic oils as per ISO.	2M	CO1	BL1
	c)	What is the difference between an DCV and PCV?	2M	CO2	BL1
	d)	What are the disadvantages of a by-pass or bleed-off circuit?	2M	CO2	BL1
	e)	Why are accumulators used?	2M	CO3	BL1
	f)	What are the advantages of a regenerative circuit?	2M	CO3	BL1
	g)	Name five characteristics of pneumatic systems.	2M	CO4	BL1
	h)	List the basic five rules that are important in design of pneumatic circuits.	2M	CO4	BL1
	i)	Draw the symbol for an electromagnetic relay.	2M	CO5	BL1
	j)	Explain the functions of an off-delay timers with suitable circuit.	2M	CO5	BL4

PART- B
(10*5 Marks = 50 Marks)

2	a)	Explain the structure of hydraulic system.	5M	CO1	BL4
	b)	What is the difference between a fixed displacement pump and a variable displacement pump?	5M	CO1	BL1

OR

3	a)	What are the factors considered for selecting hydraulic pump?	5M	CO1	BL1
	b)	A hydraulic motor receives a flow rate of 72 LPM at a pressure of 12000 kPa. If the motor speed is 800 RPM, determine the actual torque delivered by the motor assuming the efficiency 100%?	5M	CO1	BL3

4		Discuss briefly the operation of a pilot-operated pressure relief valve.	10M	CO2	BL2

OR

5		Explain the construction and operation of electric solenoids and compare the DC and AC solenoids	10M	CO2	BL4

6	a)	With the help of a neat sketch, explain how the speed of a cylinder can be controlled using a proportional valve.	5M	CO3	BL4
	b)	What are the conditions for the two cylinders to be synchronized?	5M	CO3	BL1

OR

7		Mention some of the industrial applications of an accumulator. Explain any one of them with an example.	10M	CO3	BL4

8	a)	Explain the working of 5/3 Direction control valve for with a neat sketch.	5M	CO4	BL4
	b)	Discuss the two ways to remove the water from the air in the air distribution system	5M	CO4	BL2

OR

9	a)	With the help of neat sketch explain the working of air regulator or FRL unit.	5M	CO4	BL4
	b)	State clearly nine qualities of filtered air requirement and its application	5M	CO4	BL1

10	a)	Explain the step displacement diagram for A+B+B-A- sequence.	5M	CO5	BL4
	b)	Differentiate between ON time delay and OFF time delay with help of symbols	5M	CO5	BL2

OR

11	a)	What are the different ways to sense the end position and movement of cylinder	5M	CO5	BL1
	b)	State the applications of pneumatic systems.	5M	CO5	BL2

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CO-Course Outcome   **BL - Blooms Taxonomy Levels**