Question Paper Code	12452

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023
Fourth Semester
Mechanical and Automation Engineering
20MUPC401 - FLUID POWER AUTOMATION
(Regulations 2020)

Duration: 3 Hours   Max. Marks: 100

PART - A (10 × 2 = 20 Marks)
Answer ALL Questions

		Marks, K-Level, CO
1.	Name the basic components of hydraulic systems.	2,K1,CO1
2.	What are fluid power symbols? Why they are essential?	2,K2,CO1
3.	Define mechanical and volumetric efficiency of a pump.	2,K1,CO2
4.	Point out the function of an air filter.	2,K1,CO2
5.	Point out the purpose of a Quick Exhaust Valve.	2,K2,CO3
6.	Describe the function of check valves.	2,K2,CO4
7.	Define FRL unit and represent the standard graphical symbol for FRL unit.	2,K2,CO4
8.	List any four advantages of pneumo-hydraulic circuits.	2,K1,CO5
9.	Define fluidics.	2,K1,CO5
10.	List three major units of a PLC.	2,K2,CO5

PART - B (5 × 13 = 65 Marks)
Answer ALL Questions

11.	a)	Mention the various type of oil used in power hydraulic system and explain it in detail.	13,K2,CO1
		OR	
	b)	Discuss the components required for basic pneumatic system & Mention their functions.	13,K2,CO1
12.	a)	Explain the working principle of radial piston pumps with neat sketch.	13,K2,CO2
		OR	
	b)	With a neat sketch of the pneumatic Regulator, explain its construction and working.	13,K2,CO2
13.	a)	With a neat sketch describe the construction and operation of a pressure compensated flow control valve.	13,K2,CO3
		OR	

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **12452**

b) Explain with neat sketch about the following
   (i). Unloading valve.   *7,K2,CO3*
   (ii). Sequence valve.   *6,K2,CO3*

14. a) Explain the regenerative circuit with a suitable application.   *13,K2,CO4*

OR

b) With a neat diagram, explain the semi-automatic material handling pneumatic circuit.   *13,K2,CO4*

15. a) Write a block diagram; describe the operation of a programmable logic controller.   *13,K2,CO5*

OR

b) Design an electro hydraulic system for the electrical control of a sequence of A+ B+ A- B- operation and also represent the ladder circuit.   *13,K3,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Draw the PLC ladder diagram for the following logic functions: (i) AND, (ii) OR, (iii) NOR and (iv) NAND.   *15,K3,CO6*

OR

b) Discuss the applications, advantages of digital hydraulics over ordinary pneumatic and hydraulic circuits with suitable examples.   *15,K3,CO6*