Reg. No.												

Question Paper Code	13028

M.E. / M.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024

Third Semester

M.E. - CAD/CAM

20PCDEL302 - DESIGN OF HYDRAULIC AND PNEUMATIC SYSTEMS

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	List the role of an actuator in a hydraulic system.	2	K1	CO1
2.	List the common types of pumps used in hydraulic systems and their typical applications.	2	K1	CO1
3.	What is the primary function of a pressure control valve?	2	K1	CO2
4.	Which valve controls the direction of fluid flow in a hydraulic system?	2	K1	CO2
5.	Why is grinding considered a finishing process in machining?	2	K1	CO3
6.	What is the purpose of a quick return mechanism in hydraulic systems?	2	K1	CO3
7.	Define a pneumatic logic circuit and its importance.	2	K1	CO4
8.	How does a pressure switch contribute to pneumatic safety?	2	K1	CO4
9.	Mention one application of robotic pneumatic circuits.	2	K1	CO5
10.	What is fault-finding?	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a)	Discuss the performance characteristics of hydraulic pumps, such as volumetric efficiency, mechanical efficiency, and overall efficiency.	13	K2	CO1
		OR			
	b)	Illustrate the gear pumps and piston pumps in terms of construction, operation, efficiency, and typical applications.	13	K2	CO1
12.	a)	Describe the function and operation of a directional control valve.	13	K2	CO2
		OR			
	b)	Compare and contrast different actuation systems used in control valves. Provide examples of where each type is typically used.	13	K2	CO2
13.	a)	Describe the role and importance of accumulator circuits in hydraulic systems. Provide examples of their applications.	13	K2	CO3
		OR			

	b)	Explain the importance of design and selection of components in industrial circuits. What factors should be considered during this process?	*13*	*K2*	*CO3*
14.	a)	Compare the position and pressure sensing elements in pneumatic systems and their applications.	*13*	*K2*	*CO4*
		OR			
	b)	Outline the basic principles of pneumatics and the key elements in a pneumatic control system.	*13*	*K2*	*CO4*
15.	a)	Classify the main components of a pneumatic system, and what are their functions.	*13*	*K2*	*CO5*
		OR			
	b)	Explain the working and function of a PLC in controlling pneumatic systems.	*13*	*K2*	*CO5*

PART - C (1× 15 = 15 Marks)

16.	a)	Classify the fault-finding methods in pneumatic systems and give examples.	*15*	*K2*	*CO5*
		OR			
	b)	Explain the selection criteria for pneumatic components in designing a system.	*15*	*K2*	*CO5*