

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***UG / PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2026****Fourth Semester****Mechanical Engineering****ME3492 / UMET24401 – HYDRAULICS AND PNEUMATICS****Regulations – 2021/2024****Duration : 3 Hrs****Maximum : 100 Marks****PART – A(ANSWER ALL QUESTIONS) (Marks 10*2=20)**

Q.No	Questions	BLT	CO	Marks
1.	Define absolute viscosity and kinematic viscosity.	L1	1	2
2.	Give the expression used to determine friction factor for laminar flow through pipes.	L1	1	2
3.	When lobe pump is preferred?	L1	2	2
4.	Write the function of solenoid valve.	L1	2	2
5.	What is meant by an air over oil system?	L1	3	2
6.	Name one application of a counterbalance valve.	L1	3	2
7.	What are fluidic devices?	L1	4	2
8.	Sketch the pneumatic symbol of pneumatic regulator.	L1	4	2
9.	How is the speed of a cylinder controlled in pneumatic system?	L1	5	2
10.	State the role of PLC in fluid power industry.	L1	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11.	a i State and explain Pascal's law with its application.	L2	1	10
	ii What are the required properties of good hydraulic fluid?	L2	1	6
	Or			
	b With a neat sketch explain the construction, working, advantages, application and limitation of non-pressure compensated vane pump.	L2	1	16
12.	a i With a neat sketch, explain the construction and working of cushioning mechanism in hydraulic cylinder.	L2	2	8
	ii Explain with neat sketch, the principle and operation of telescopic cylinder.	L2	2	8
	Or			
	b i Explain Direct acting pressure reducing valve with sketch.	L2	2	8
	ii Write the short notes on Pilot operated sequence valve.	L2	2	8
13.	a i Explain the working principles of a fail -safe circuits with over load protection.	L2	3	8
	ii Give any one application circuit employing accumulator.	L2	3	8
	Or			
	b Explain the following circuits with neat sketch.	L2	3	16
	i) Meter-In circuit (8 marks)			
	ii) Meter Out circuit (8 marks)			

14.	a i	Develop an electro pneumatic circuit for the following sequence A+B+A-B- where A and B stands for cylinders +indicate extension and – indicate retraction of cylinders	L3	4	10
	ii	What are advantages of PLC?	L2	4	6
Or					
	b i	Design a pneumatic circuit for the following sequence using cascade method A+B+B-A-C+C-	L3	4	10
	ii	Discuss the function of FRL unit.	L2	4	6
15.	a	Identify various operating problems associated with pumps and valves, possible causes and suitable remedy for each problem.	L2	5	16
	Or				
	b i	What are the factors considered during the installation of pneumatic systems?	L2	5	10
	ii	Explain the principle of low-cost automation.	L2	5	6
