



B.E DEGREE EXAMINATIONS: NOV/DEC 2022

(Regulation 2018)

Seventh Semester

AUTOMOBILE ENGINEERING

U18AUE0019: Applied Hydraulics and Pneumatics

COURSE OUTCOMES

- CO1:** Understand the Fluid properties and functions and applications of Fluid Power
CO2: Describe the concept used to design the systems
CO3: Illustrate the working of hydraulic components
CO4: Summarize the working of pneumatic components
CO5: Design and implement simple fluid power systems common in industrial applications using commercial components
CO6: Familiarize the actual fluid power circuits used in Automotive and Industrial Applications

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

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|--|-----|-------------------|
| 1. What are the limitations of fluid power? | CO1 | [K ₁] |
| 2. Draw the symbol for a 3-position, 4-way, closed center solenoid operated direction control valve. | CO2 | [K ₂] |
| 3. What is balanced vane pump? | CO3 | [K ₁] |
| 4. Differentiate positive and non-positive displacement pump. | CO3 | [K ₂] |
| 5. Define linear actuator. | CO4 | [K ₁] |
| 6. List out the functions of accumulator. | CO4 | [K ₂] |
| 7. What is cascading? | CO5 | [K ₂] |
| 8. State the purpose of a regenerative circuit. | CO5 | [K ₂] |
| 9. What is ladder diagram? | CO6 | [K ₁] |
| 10. List out important elements of PLC. | CO6 | [K ₁] |

Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

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|--|---|-----|-------------------|
| 11. a) Explain the functions of Pneumatic system components. | 8 | CO1 | [K ₂] |
| b) Draw the fluid power symbols of any four accessories. | 8 | CO2 | [K ₃] |

12.	a)	Differentiate hydraulic motor and hydraulic pump.	8	CO2	[K ₂]
	b)	Explain the working of the external gear pump with neat sketch.	8	CO4	[K ₃]
13.		Explain the direction control valve and its types with neat sketch.	16	CO3	[K ₂]
14.		Explain the following accumulators with neat sketch		CO4	[K ₂]
	a)	Weight-loaded accumulator	8		
	b)	Spring-loaded accumulator	8		
15.	a)	Design and draw a hydraulic circuit for A ⁺ B ⁺ B ⁻ A ⁻ sequence operation and explain.	8	CO5	[K ₃]
	b)	Draw and explain the speed control of a hydraulic cylinder circuit.	8	CO5	[K ₃]
16.		Discuss the basic electrical devices used in electro pneumatics with a neat sketch.	16	CO6	[K ₃]
