

CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

18ME55

Fifth Semester B.E. Degree Examination, Dec.2024/Jan.2025

Fluid Power Engineering

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define Fluid power and list various advantages. (05 Marks)
- b. List the various applications of fluid power systems. (05 Marks)
- c. With a neat symbolic represent and explain the components of hydraulic system. (10 Marks)

OR

- 2 a. What are the various functions of hydraulic fluids? (05 Marks)
- b. Define Pascal's law and explain with an example. (05 Marks)
- c. With a neat sketch explain the pressure line and suction line filtering. (10 Marks)

Module-2

- 3 a. Classify the various types of the positive displacement pump. (05 Marks)
- b. A gear pump has a outside diameter of 100 mm, inside diameter 80 mm and a width of gear 25 mm. If the actual flow of pump is 95 lpm and at pump speed is 1440 rpm. What is the volumetric displacement, theoretical discharge and volumetric efficiency. (05 Marks)
- c. With a neat sketch explain the construction and working of external gear pump. (10 Marks)

OR

- 4 a. With a neat sketch explain the pumping theory. (05 Marks)
- b. Classify the various types of an accumulators. (05 Marks)
- c. With a neat sketch explain the hydraulic cylinder cushioning. (10 Marks)

Module-3

- 5 a. With a neat sketch explain the working of shuttle valve. (05 Marks)
- b. List with symbolic diagram of various types of pressure control valves used in fluid power systems. (05 Marks)
- c. Explain the working of 4/2 solenoid operated direction control valve. (10 Marks)

OR

- 6 a. With a neat sketch explain the working of needle valve. (05 Marks)
- b. Explain the controlling of single acting cylinder with the neat circuit. (05 Marks)
- c. With a neat circuit explain the working of regenerative circuit. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42+8 = 50, will be treated as malpractice.

Module-4

- 7 a. Write short notes on filter-regulator-lubricator (FRL), used in pneumatic systems. (05 Marks)
b. With a neat sketch explain the construction and working of double acting cylinder. (05 Marks)
c. What is the function of a seal? Explain the wiper seal with a neat sketch. (10 Marks)

OR

- 8 a. Name the various components used in pneumatic system and its fluid power symbols. (05 Marks)
b. With a neat sketch explain the construction and working of 2/2 Ball seated poppet valve. (05 Marks)
c. With a neat circuit explain the application of quick exhaust valve. (10 Marks)

Module-5

- 9 a. Explain the indirect actuation of double acting pneumatic cylinder using memory valve with a suitable circuit. (10 Marks)
b. With a neat sketch explain the direct control of single acting pneumatic cylinder using electro – pneumatic control. (10 Marks)

OR

- 10 Explain the working of pneumatic circuit in the following sequencing of two cylinders using cascading method for the sequence of $A^+ B^+ B^- A^-$. (20 Marks)
