

MASTER OF VOCATION
Robotics and Automation
Subject: Pneumatics & Hydraulics Control
Subject Code: ME-901
Semester: Fourth
July 2022
Theory (External): 35 Marks
Time: 03 Hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

Roll Number									

SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)
(10x1=10 Marks)

- A. Distinguish between hydraulic and pneumatic systems.
- B. What are the uses of volumetric flow, mass flow and velocity of flow?
- C. What do you understand by servomechanism?
- D. What are the functions of sensors and actuators?
- E. Differentiate between centrifugal pumps and positive displacement pumps.
- F. What are flow control valves?
- G. What purpose does the PID controller serves?
- H. What are the functions of shuttle valves?
- I. What are the expected failures in hydraulic circuits due to dirt, heat, improper fluids, and faulty installations?
- J. What are the selection criteria for hydraulic motor?

SECTION –B (ESSAY TYPE QUESTIONS)
(5x5=25 Marks)

1. Describe the fluid properties. Explain the hydraulic systems and their components.
2. List different safety precautions required for handling Industrial hydraulics and pneumatics systems

3. Explain the constructional detail and working of external gear pump. Give its applications.
4. Explain the actuation symbols of valves. Represent the actuation details of a solenoid-operated 4/3 valve, with spring return to centre.
5. Out of the three speed control methods, select the suitable one for hydraulic shaper and explain it with circuit diagram.
6. What are the hydraulic control elements? How the speed of a hydraulic cylinder is controlled? Explain.
7. Explain with neat sketch the working of an air-filters and pressure regulators for pneumatic systems.
8. Explain with neat sketch working of quick exhaust valve.

****END OF PAPER****