



## DEPARTMENT OF MECHANICAL ENGINEERING

### VISION

*“To incorporate technical & professional skills in Mechanical Engineers to fulfill industrial & social needs”.*

### MISSION

- *To educate, guide, and mentor the students for academic excellence.*
- *To develop technical skills and discipline among the students as per the requirement of the industry.*
- *To impart ethics & social values by arranging social activity.*

**Subject Name: Industrial hydraulics and pneumatics(22655)**

**Date :-**

**Assignment No: - 1**

**Course Outcome:602.1**

**Topic Name :- Introduction to Hydraulic and Pneumatic System**

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1. State the essential properties of hydraulic fluids
  2. What is the function of (i) oil reservoir (ii) pressure relief valve, (iii) direction control valve, (iv) filters ?
  3. What are the advantages of pneumatic system over hydraulic systems
  4. Draw symbols of: 1) 4/3 direction control valve 2) Pilot operated pressure relief valve 3) Sequence valve
  5. In cold climate why oil tank is equipped with oil heaters? Explain.
  6. Draw a general layout of the pneumatic system and state the function of components.
  7. Differentiate Hydraulic and Pneumatic systems.
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**Date of Submission :-**

**Assign By :- Mrs.Sarika Tushar Raut**



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**Subject Name: Industrial hydraulics and pneumatics(22655)**

**Date :-**

**Assignment No :- 2**

**Course Outcome: 602.2**

**Topic Name :- Pump and Actuators**

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1. Compare linear actuators and rotary actuators.
  2. Explain any two mounting methods of cylinder.
  3. Draw neat labelled sketch of (i) Internal gear pump  
(ii) Gerotor pump
  4. Explain variable displacement axial piston pump with neat sketch.
  5. Explain any four criteria for selection of hydraulic pump in hydraulic system.
  6. What are actuators ? Draw a double acting cylinder.
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**Subject Name: Metrology and Measurement (313316)**

**Date :-**

**Assignment No :- 3**

**Course Outcome: 602.3**

**Topic Name :-Control Valves**

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1. Draw symbol of unloading valve and sequence valve.
  2. With a neat sketch explaining the pressure compensated flow control valve. Draw a symbol of it.
  3. Explain 4-way-3 position direction control valve used in hydraulic system.
  4. Classify flow control valves with their application.
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5. State any two applications of  $3 \times 2$  DC valve. Draw symbol for the same.
6. Explain with neat sketch the working of rotary spool type DC valve.

**Subject Name: Metrology and Measurement (313316)**

**Date :-**

**Assignment No :- 4**

**Course Outcome: 602.4**

**Topic Name :- Compressor, Pneumatic Components**

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1. What is FRL ? State the function of each component of FRL.
  2. What is the function of filters ? Classify the filters and draw any two types of filters
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3. Name any four components of the pneumatic system. What are the factors considered while selecting them ?
4. What are the various types of Hoses used in a pneumatic system ?
5. What is an accumulator ? Why an accumulator is necessary for huge hydraulic presses.

**Subject Name: Metrology and Measurement (313316)**

**Date :-**

**Assignment No :- 5**

**Course Outcome: 602.5**

**Topic Name :- Oil Hydraulic Circuit**

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1. Compare meter-in-circuit with meter-out-circuit, draw a neat sketch of meter-in-circuit.

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2. Draw bleed off circuit and label it.
3. Explain actuated position of control of single acting cylinder with neat circuit.
4. Using double acting cylinder, flow control valve with check valve, pressure relief valve, filter and DC valve, develop a circuit for speed control during a return stroke.
5. What is impulse pneumatic circuit? Explain
6. Draw the hydraulic circuit for shaping machine. Explain its working

**Subject Name: Metrology and Measurement (313316)**

**Date :-**

**Assignment No :- 6**

**Course Outcome: 602.6**

**Topic Name :- Oil Hydraulic Circuit**

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1. Describe with a neat sketch, how the speed of bidirectional air motor is controlled.
2. Develop a pneumatic circuit for operation of two DA cylinders such that one operates after another at a certain time interval using a time delay valve.
3. Draw speed control of single acting cylinder pneumatic circuit using  $3 \times 2$  DC valve.
4. Draw Time delay Circuit.
5. Explain Simple electro-Pneumatic circuit.
6. State the need for a speed Control Circuit.

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