**B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023**
Sixth Semester
**Mechanical Engineering**
**ME8694 - HYDRAULICS AND PNEUMATICS**
(Regulations 2017)

Duration: 3 Hours                                                                 Max. Marks: 100

**PART - A (10 × 2 = 20 Marks)**
Answer ALL Questions

*Marks, K-Level, CO*

1. What is Fluid? — *2,K1,CO1*
2. Define Pascal Law. — *2,K1,CO1*
3. What is Tandem Cylinder? — *2,K1,CO2*
4. Compare the difference between pressure relief valve and pressure reduce valve? — *2,K2,CO2*
5. Define Intensifier. — *2,K1,CO3*
6. Discuss the function of an accumulator. — *2,K2,CO3*
7. Point out the purpose of a quick Exhaust Valve. — *2,K1,CO5*
8. Recall the function of a ladder diagram. — *2,K1,CO5*
9. What is a power pack? What are the important components of a hydraulic power pack? — *2,K1,CO6*
10. What is the meaning of the term 'Low-cost Automation'? — *2,K1,CO6*

**PART - B (5 × 13 = 65 Marks)**
Answer ALL Questions

11. a) Write the various properties of fluids in detail. — *13,K1,CO1*

**OR**

   b) What is Gear Pump? Explain the working principle of Gear pump and its types with neat sketch. — *13,K1,CO1*

12. a) Draw the simple circuit using double acting cylinder for any application and explain it. — *13,K2,CO2*

**OR**

   b) With neat sketch explain the working principle of Double Rod Cylinder and Through rod cylinder. — *13,K2,CO2*

13. a) With neat sketch explain the construction and working of various types of accumulator. — *13,K2,CO3*

*K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create*

b) Explain Air-Over Oil Intensifier and Pressure Intensifier with neat sketch.  *13,K2,CO3*

14. a) Explain FRL Unit with neat sketch.  *13,K2,CO5*

**OR**

b) Explain Meter in and Meter out Circuit with neat sketch.  *13,K2,CO5*

15. a) Explain and draw the circuit using the various hydraulic components for drilling operation.  *13,K2,CO6*

**OR**

b) Enlist the various faults, probable causes and also the remedial actions for the following pneumatic system components:  *13,K2,CO6*
(a) Compressor (b) FRL unit (c) Air cylinder (d) Pipelines and hoses

### PART - C (1 × 15 = 15 Marks)

16. a) Design a pneumatic cascade circuit for the following sequence of operation: A+ B +B -C +C -A -  *15,K3,CO4*

**OR**

b) Provide a pneumatic circuit using cascade method for the sequence A+ A- B+ B- and explain its working principle.  *15,K3,CO4*