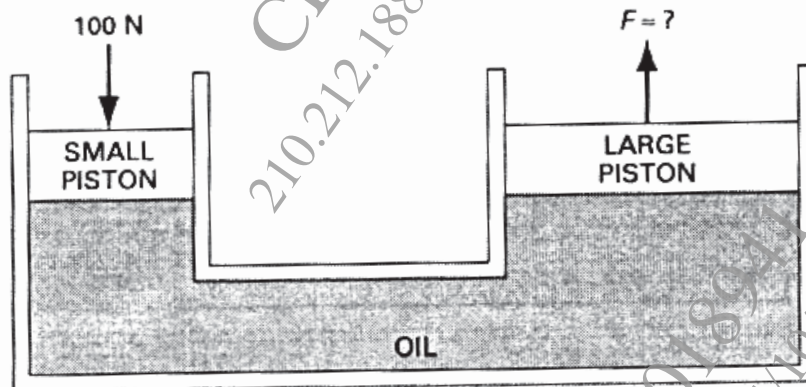


Oct-22/TE/Insem-621**T.E. (Robotics and Automation Engineering)****HYDRAULICS & PNEUMATICS****(2019 Pattern) (Semester - I) (311502 (A))****Time : 1 Hour]****[Max. Marks : 30****Instructions to the candidates:**

- 1) *Figure to the right indicates full marks.*
- 2) *Neat Diagram must be drawn wherever necessary.*
- 3) *Assume Suitable data if necessary.*
- 4) *Use of Logarithmic Table, Slide rule is Electronic pocket calculator is allowed.*
- 5) *Solve Q.1 or Q.2, Q.3 or Q.4.*

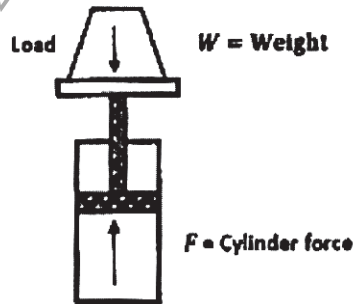
- Q1) a)** State and explain governing law used in fluid power system in details. [7]
- b)** In the hydraulic jack shown in Figure, a force of 100 N is exerted on the small piston. Determine the upward force on the large piston. The area of the small piston is 50 cm², and the area of the large piston is 500 cm², if the small piston moves 10 cm, how far will the large piston move? Assume the oil to be incompressible. [8]

**OR**

- Q2) a)** Differentiate between hydraulics and pneumatics. [7]
- b)** Draw a simple hydraulic system showing all its essential components and explain the function of each. [8]

P.T.O.

- Q3)** a) With a neat diagram, explain the construction and working of balanced type vane pump. [7]
- b) A 6000 N weight is to be lifted upward in a vertical direction for the system shown in Figure. Find the cylinder force required to. [8]
- Move the weight at a constant velocity of 1.75 m/s/
 - Accelerate the weight from zero velocity to 1.75 m/s in 0.5s.



OR

- Q4)** a) Explain the factors that justify the pump selection. [7]
- b) Draw ISO symbols for the following components: [8]
- Variable displacement hydraulic motor.
 - Double rod hydraulic cylinder
 - Cylinder with cushioning .
 - Double acting Cylinder.

