Total No. of Questions : 4]

SEAT No. :

PC-113

[Total No. of Pages : 2

[6360]-119
T.E. (Robotics & Automation) (Insem.)
HYDRAULICS & PNEUMATICS
(2019 Pattern) (Semester - I) (311502 A)

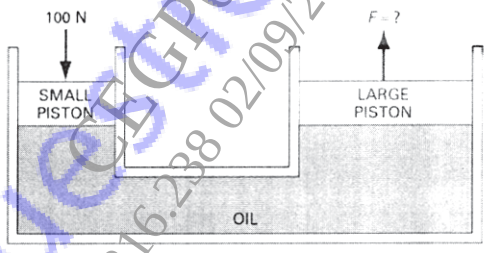
Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates :

1) ***Solve Q.1 or Q.2, Q.3 or Q.4.***
2) ***Neat diagram must be drawn wherever necessary.***
3) ***Figure to the right indicate full marks.***
4) ***Use of Logarithmic table, slide rule is electronic pocket calculator is allowed.***
5) ***Assume suitable data, if necessary.***

Q1) a) Differentiate between Hydraulic systems and Pneumatic systems. **[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 cm^2 and the area of the large piston is 500 cm^2, if the small piston moves 10 cm, how far will the large piston move? Assume the oil to be incompressible. **[8]**



OR

Q2) a) Explain any seven desirable properties of hydraulic fluid. **[7]**

b) Draw a simple Pneumatic system showing all its essential components and explain the function of each. **[8]**

Q3) a) With neat Sketch, Explain Construction and working of External Gear Pump. **[7]**

b) A three stage displacement type telescopic cylinder is used to lift the body of lorry. When the body is fully laden, the cylinder has to exert a force equivalent to 400 kg at all points in its stroke. The outside diameter of tubes forming the three stages are 60,80 and 100mm. If he pump powering the cylinder delivers 10 LPM, calculate the extend speed and pressure required for each stage of the cylinder when lifting fully laden lorry. **[8]**

P.T.O.

OR

Q4) a) With a neat diagram, explain the construction and working of Gear Motors. **[7]**

b) A pump supplies oil at 0.002 m^3/s to a 50mm diameter double acting cylinder and a rod diameter is 20mm. If the load is 6000N both in extending and retracting, find **[8]**

i) Piston velocity during the extension stroke and retraction stroke.

ii) Pressure during the extension stroke and retraction stroke.

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