

Total No. of Questions : 4]

SEAT No. :

PE113

[Total No. of Pages : 2

[6579]-419

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

Time : 1 Hour]

[Max. Marks : 30

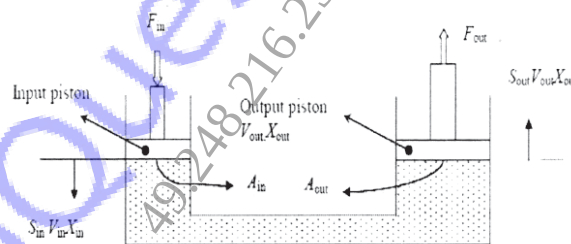
Instructions to the candidates:

- 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 or 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) An input cylinder with a diameter of 30 mm is connected to an output cylinder with a diameter of 80 mm (Fig.). A force of 1000 N is applied to the input cylinder. [8]

- i) What is the output force?
- ii) How far do we need to move the input cylinder to move the output cylinder 100 mm?



OR

Q2) a) Differentiate between hydraulics and Pneumatics. [7]

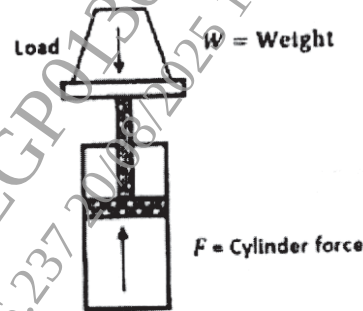
b) Explain with neat sketch, pumping theory of positive displacement pump. [8]

P.T.O.

Q3) a) With a neat diagram, explain the construction and working of Unbalanced 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]

- i) Move the weight at a constant velocity of 1.75 m/s.
- ii) Accelerate the weight from zero velocity to 1.75 m/s in 0.5 s.



OR

Q4) a) Draw ISO symbols for the following components: [7]

- i) Variable displacement hydraulic motor
- ii) Double rod hydraulic cylinder
- iii) Cylinder with cushioning
- iv) Double acting Cylinder

b) An 8 cm diameter hydraulic cylinder has a 4 cm diameter rod. If the cylinder receives flow at 100 LPM and 12 MPa, find the [8]

- i) extension and retraction speeds and
- ii) extension and retraction load carrying capacities

