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B.E / B.Tech( Full Time) DEGREE END SEMESTER EXAMINATIONS, APR / MAY 2019  
MECHANICAL ENGINEERING

Fifth Semester

ME 8552 HYDRAULICS & PNEUMATICS  
(Regulation 2012)

(Common to B.E Mechanical and Manufacturing Engineering)

Time : 3 Hours

Answer ALL Questions

Max. Marks 100

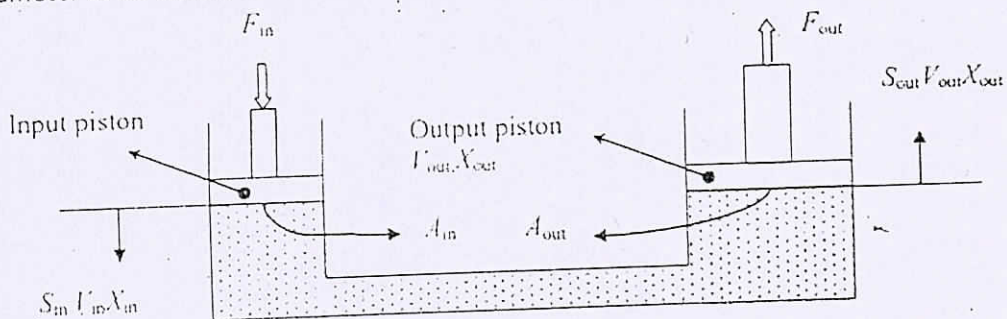
**PART-A (10 x 2 = 20 Marks)**

1. Distinguish between viscosity and viscosity index.
2. State the reason why positive displacement pumps are suitable for hydraulic applications.
3. Draw and differentiate the symbols of pressure relief valve and pressure reducing valve.
4. Differentiate between check valve and shuttle valve.
5. What is an intensifier?
6. What is a proportional direction control valve and how it is different from commonly used direction control valve.
7. What is Coanda effect in fluidics?
8. Draw an AND pneumatic logic circuit.
9. State any commonly occurring faults in pneumatic cylinders.
10. List the any elements used in electropneumatics and draw their symbol.

**Part - B ( 5 x 16 = 80 marks)**

11. (i).with a neat sketch explain the principle, construction of a vane pump. (10)

(ii) An input cylinder with a diameter of 30 mm is connected to an output cylinder with a diameter of 80 mm. A force of 1000 N is applied to the input cylinder.



What is the output force? :

(6)



6/5/19

- 12 a (i) .With neat sketches explain the construction of a double acting cylinder. Explain also how they are classified. (10)  
(ii) . Classify the cylinder mountings and explain how it affects its strength?

(OR)

- 12 (i) Draw and explain the working of a pressure reducing valve and explain its use with a circuit. (10)  
b) (ii) .Explain the working of 4/3 direction control valve with a neat sketch. (6)

- 13 (i).With neat circuits explain various actuator speed control circuits (8)  
a) (ii). What is a regenerative circuit? Explain it with any two methods to accomplish it. (8)

(OR)

13 b(i) Design a sequential circuit using the hydraulic sequence valve. (8)

(ii). Draw and explain the Hi-LO Circuit. (8)

14 a Design a sequential circuit using cascade valve for the following sequence  $A^+B^+C^+C^-B^-A^-$ .

(OR)

- 14 b.(i).Draw a electro pneumatic sequencing circuit for the sequence  $A^+B^+ A^- B^-$  where A and B double acting cylinders controlled by 5/2 Double solenoid DCV's (10)  
(ii) What is a Flip-flop and explain its working with a neat sketch.. (6)

- 15 a (i) Draw and explain the working of the hydraulic circuit used in shaping machine. (8)  
(ii). Draw and explain the circuit used hydraulic planning machine. (8)

(OR)

15 b Write short notes on any two of the following: (2x8=16)

- (i) Accumulators  
(ii) Trouble shooting of pneumatic valves  
(iii) Filters.

