

B.E./B.TECH. Degree Examination, December 2020

Semester - VI

ME16605 - Hydraulics and Pneumatics

(Regulation 2016)

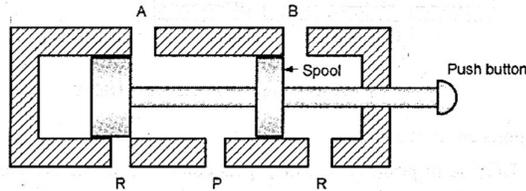
Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

1. Pressure intensifiers are used in a circuit to supply
 - a) Very high pressure
 - b) Pilot pressure
 - c) Low pressure
 - d) Medium pressure
2. Limit switch is a
 - a) Proximity sensor
 - b) Position sensor
 - c) Pressure sensor
 - d) Flow sensor.
 - e) All the above
3. The type of compressor that produces high pressure ratio
 - a) Screw type
 - b) Piston type
 - c) Lobe type
 - d) Vane type
 - e) All the above
4. Hydraulic and pneumatic circuits
 - a) Perform the same with some exceptions
 - b) Perform the same way for all functions
 - c) Perform differently for all functions
 - d) Does not perform all the functions
5. Identify the type of the pump used in high and low pressure applications with any one example
6. Brief the impact due to sudden enlargement in cross section of pipe in fluid flow.

7. Name the DVC shown in the picture and draw its ISO symbol



8. List the specific advantages of electro pneumatics over traditional hydraulics and pneumatics.

PART B - (4 X16 = 64 marks)

09. (a) (i) Why must positive displacement pumps be protected by relief valves? (8)
Construct and explain about a pump showing six vanes with a neat sketch.

- (ii) Take a plant tour of a company that manufactures fluid power components such as pumps, cylinders, valves, or motors. Write a report stating how at least one component is manufactured. List the specifications and include potential customer applications. (8)

(OR)

- (b) (i) Explain the importance of volumetric efficiency in a hydraulic pump (8)
performance.

- (ii) State the need of pressure compensation in pumps and explain its (8)
application by selecting the suitable pump with a neat sketch.

10. (a) (i) Prove that an accumulator can act as an emergency power source with a (8)
neat sketch

- (ii) Discuss with a hydraulic circuit to speed up the extending speed of a (8)
double-acting cylinder.

(OR)

- (b) Discuss the speed control operations using flow control valve which is fixed (16)
between

- (i) DCV and the actuator;
(ii) Actuator and the reservoir and
(iii) pressure line and return line.

11. (a) (i) Explain with suitable circuit how automatic cylinder reciprocates with (8)
two sequence valves

- (ii) Describe the scheme of controlling the cylinder return stroke by using (8)
quick exhaust valve

(OR)

- (b) Justify that fluidics has specific advantages over fluid power system and (16)
explain any two fluidic devices with neat sketches showing control and no
control signals.
12. (a) (i) Explain the role of microprocessor and PLC in low cost automation (6)
(ii) Explain with a circuit how in shaping operation a fast approach, slow
feed, and rapid return can be achieved (10)

(OR)

- (b) Three pneumatic cylinders A, B, C are used in an automatic sequence of (16)
operation. A cylinder extends, B cylinder extends, C cylinder extends and
then C cylinder retracts, B cylinder retracts, and A cylinder retracts. Develop
pneumatic circuit by cascade method. Also sketch the travel step diagram and
explain briefly.