

Total No. of Questions :8]

SEAT No. :

**P3479**

[Total No. of Pages :3

**[5560]-115**

**T.E. (Mechanical)**

**HYDRAULICS AND PNEUMATICS**

**(2012 Pattern) (Semester-I)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Answer Q.No.1 or Q.No.2, Q.No.3 or Q.No.4, Q.No.5 or Q.No.6, Q.No.7 or Q.No.8,*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right Indicate full marks.*
- 4) *Use of Electronic pocket calculator is allowed.*
- 5) *Assume suitable data, if necessary.*

- Q1)** a) What is the difference between the terms fluid power, hydraulics and pneumatics? [6]
- b) Explain the different types of accumulator used in hydraulic circuit and state their applications. [6]
- c) A positive displacement pump has geometric displacement of  $81.95\text{cm}^3$  It delivers of  $75.84\text{rpm}$  of oil while operating at  $1000\text{RPM}$  at a pressure of  $6.9\text{Mp}$  a the input torque of the prime mover is  $101.25\text{N-m}$  find: [8]
- (a) Overall efficiency of the pump.
  - (b) Theoretical torque required to operate the pump.

OR

- Q2)** a) What are effects of contaminants on different components of hydraulic system? [6]
- b) Explain the term Beta rating in relation with filter. [6]
- c) State and explain governing law used in fluid power system in detail. [8]
- Q3)** a) What is a function of a shuttle valve? Explain its working with simple sketch. [6]
- b) Draw a circuit showing the application of a 3/2DCV. [6]
- c) Draw a neat sketch and explain working of a pressure reducing valve. [6]

OR

**P.T.O.**

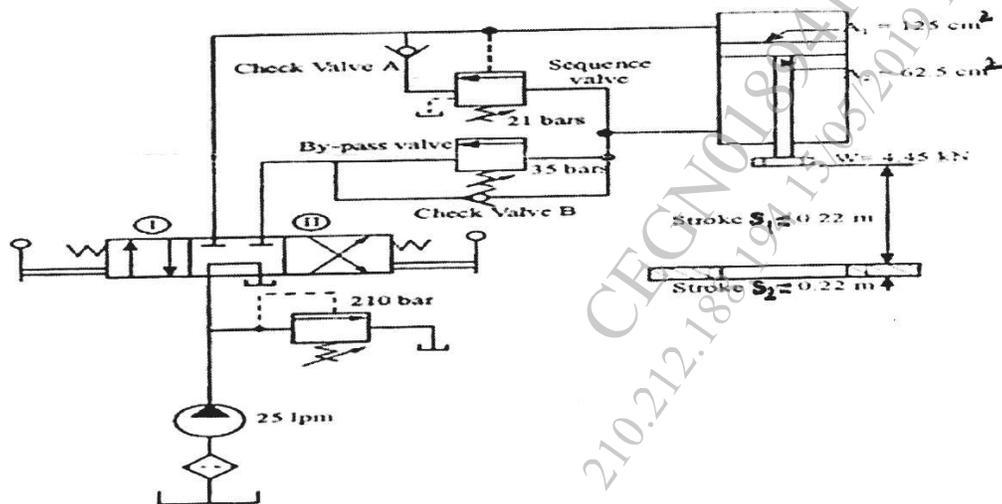
- Q4)** a) Draw a regenerative circuit by using 4/3 DCV and explain its application [6]  
 b) Name three different types of cylinder mounting with sketch. [6]  
 c) Differentiate between meter in circuit and meter out circuit. [6]

- Q5)** a) Explain with a neat sketch of quick exhaust valve and draw a typical circuit showing all parts. [6]  
 b) Explain the terms in respect of a hydraulic motor. [6]  
 i) Volumetric Efficiency  
 ii) Mechanical Efficiency  
 iii) Overall Efficiency  
 c) Explain the difference between direct and pilot operated pressure relief valve. [4]

OR

- Q6)** a) Draw a typical circuit showing control of a double acting cylinder operated through use of an air pilot actuated direction control valve and explain working of the circuit. [6]  
 b) Draw and Explain a typical sketch for sequencing of two double acting cylinders in respect of pneumatics. [6]  
 c) Draw a typical symbol of FRL unit and Explain its function. [4]

- Q7)** Analyze the hydraulic press circuit given below and find load and time required for press operation. [16]



OR

Q8) identify the different components and analyze the given circuit with operations [16]

