

Scheme – G

Sample Test Paper - I

Course Name : Diploma in Mechanical Engineering

Course Code : ME

Semester : Sixth

Subject Title : Industrial Fluid Power

Marks : 25

17608

Time: 1 Hour

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**Instructions:**

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

**Que.1: Attempt any THREE**

(3X3=9)

- a) Draw general layout of Hydraulic circuit and label the components.
- b) Draw symbol of ,  
i) 5/3 DCV, ii) Variable flow control valve with integral check valve, iii) Pressure relief valve
- c) Classify Hydraulic actuators.
- d) State mounting methods for actuators.

**Que.2: Attempt any TWO**

(2X4=8)

- a) Describe construction and working of External gear pump with a neat sketch.
- b) Classify accumulators and state their functions.
- c) What is the use of filter in Hydraulic circuit. Describe proportional flow filter with a neat sketch.

**Que.3: Attempt any TWO**

(2X4=8)

- a) Draw & describe working of Direct operated pressure relief valve.
- b) State the methods of actuation and represent it symbolically.
- c) State types of oil seals and give at least two uses each in hydraulic circuit.

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Sample Test Paper - II

Course Name : Diploma in Mechanical Engineering

Course Code : ME

Semester : Sixth

Subject Title : Industrial Fluid Power

Marks : 25

17608

Time: 1 Hour

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**Instructions:**

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

**Que.1: Attempt any THREE:**

(3X3=9)

- a) Draw Bleed off circuit and label all the components.
- b) State merits and limitation of pneumatic system.
- c) Suggest and draw circuit for linear speed control during positive load..
- d) Why cushioning is provided in linear actuator? Draw symbol of double acting cylinder with cushioning on both ends.

**Que.2: Attempt any TWO:**

(2X4=8)

- a) Differentiate between Hydraulic and Pneumatic circuit with respect to the following parameter.
  - i) Medium, ii) Pressure, iii) Application, iv) Lubrication.
- b) State different types of flow control valve and describe any one with neat sketch.
- c) Develop a pneumatic circuit for speed control of linear actuator using 3/2 DC valve.

**Que.3: Attempt any TWO:**

(2X4=8)

- a) State types of air compressor and describe vane type air compressor.
- b) Draw symbol of FRL unit and state function of each element in it.
- c) Draw time delay pneumatic circuit and label all the components.

Scheme – G

## Sample Question Paper

Course Name : Diploma in Mechanical Engineering

Course Code : ME

Semester : Sixth

Subject Title : Industrial Fluid Power

Marks : 100

# 17608

Time: 3 Hour

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### Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

### Q1. A) Attempt any THREE:

12 Marks

- a) Describe with neat sketch general layout of hydraulic system.
- b) Draw symbol of, i) Unidirectional hydraulic pump, ii) Temperature and pressure compensated flow control valve, iii) Pressure relief valve, iv) Pedal operated 4/3 DC valve.
- c) Give merits and limitations of hydraulic system.
- d) Describe construction and working of pressure reducing valve with line sketch.

### Q1. B) Attempt any ONE:

06 Marks

- a) Describe the construction and working of radial piston pump.
- b) With a neat sketch describe pressure compensated flow control valve. Also show symbol of the same.

### Q2. Attempt any TWO:

16 Marks

- a) Describe how speed of cutting stroke of shaper machine is regulated with neat labeled sketch.
- b) State any two applications of 3 X 2 DC pneumatic valve with suitable circuit diagram.
- c) Using DA cylinder, flow control valve with check valve, pressure relief valve, filter, DC valve develop a circuit for speed control during a return stroke.

**Q3. Attempt any FOUR:**

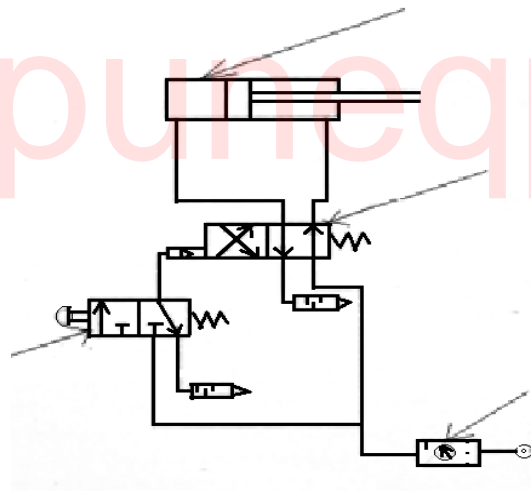
**16 Marks**

- a) Give classification of DC valve on following basis,
  - i) Actuation, ii) Port and position
- b) Give one function of filter, oil seal, accumulator and pressure relief valve used in hydraulic circuit.
- c) Draw labeled meter in circuit and describe its operation.
- d) List the essential properties of oil used in hydraulic system
- e) Give the function of FRL unit and also draw its symbol.

**Q4. A) Attempt any THREE:**

**12 Marks**

- a) Describe pressure regulating valve with neat sketch.
- b) Rearrange the following component and draw block diagram of general pneumatic system.
  - i) Flow Control Valve, ii) Compressor, iii) Direction Control Valve, iv) FRL Unit, v) Actuator, vi) Muffler
- c) With neat sketch describe construction and working of pneumatic DA cylinder.
- d) From a given circuit answer the following question



- i) Name the circuit and give its application.
- ii) Name the component represented by arrow.

**Q4.B) Attempt any ONE:**

**06 Marks**

- a) Suggest suitable system with reasoning for following applications
  - i) JCB, ii) Robot arm, iii) Universal testing machine, iv) Bolt tightening gun.
- b) Describe with neat sketch working of variable displacement vane type pump and also draw symbol.

**Q5. Attempt any TWO:**

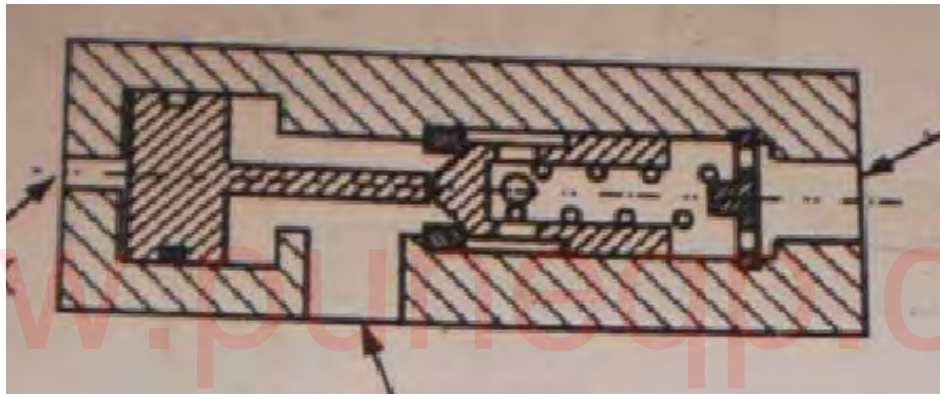
**16 Marks**

- a) Classify pneumatic actuators on the basis of i) Motion ii) Mode of action  
iii) Displacement and describe telescopic cylinder with sketch.
- b) Develop a pneumatic circuit for operation of two DA cylinders such that one operates after other at a certain time interval using time delay valve.
- c) Describe with neat sketch how speed of bidirectional air motor is controlled.

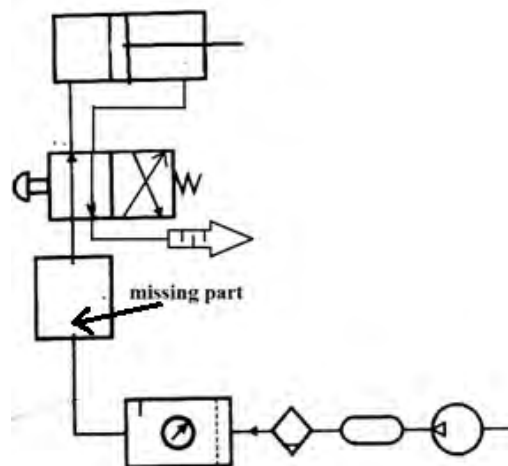
**Q6. Attempt any FOUR:**

**16 Marks**

- a) Describe with neat sketch construction and working of pneumatic hose.
- b) List the various components of pneumatic circuit and give its application.
- c) State the application of hydraulic system.
- d) From the given component answer the following question.



- i) Write the name of shown component.
  - ii) Name the parts denoted by arrow.
  - iii) Give its application.
  - iv) Draw the symbol
- e) From the given pneumatic circuit answer the following question.\*



- i) Identify and draw missing part.
- ii) Name the circuit.
- iii) State the function of missing part (component).
- iv) If missing component is not added to the circuit state which circuit will be obtained.

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