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) Mobile Phone, Pager and any other Electronic Communication
devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any THREE: 12
   (a) State the four advantages and disadvantages of screw pump.
   (b) Explain the construction of 4/2 poppet valve with neat sketch & symbol.
   (c) State the essential properties of hydraulic fluids.
   (d) Explain any two mounting methods of cylinder.

   (B) Attempt any ONE of the following: 6
   (a) Draw general layout of hydraulic system and explain its working.
   (b) With a neat sketch explain pressure compensated flow control valve.
       Draw symbol of it.

2. Attempt any TWO: 16
   (a) Explain with neat sketch the working of hydraulic circuit for milling machine.
   (b) List various types of air motors. Explain vane type air motor with neat sketch.
   (c) What is seal? Classify seals according to shape. State the factors for seal selection.
3. Attempt any FOUR:

(a) Explain the working of counter balance valve in hydraulic circuit.

(b) Discuss pilot operated check valve with neat sketch.

(c) Explain with neat sketch the working of meter out hydraulic circuit.

(d) Draw neat labelled sketch of

(i) Internal gear pump

(ii) Gerotor pump

(e) What is FRL? State the function of each component of FRL.

4. (A) Attempt any THREE:

(a) State the four merits and demerits of using a rubber hose in pneumatic circuit.

(b) List any four applications of pneumatic rotary actuator. Draw the symbol for variable speed bidirectional air motor.

(c) Explain time delay valve with neat sketch.

(d) Draw speed control pneumatic circuit for bi-directional air motor.

(B) Attempt any ONE:

(a) Explain variable displacement axial piston pump with neat sketch.

(b) Explain working of counterbalance hydraulic circuit with neat diagram.
5. Attempt any TWO: 16

(a) List different types of pressure regulator valves? Explain any one with neat sketch.

(b) Develop a pneumatic circuit for operation of two DA cylinders such that one operates after other using travel dependant sequencing.

(c) Explain pneumatic impulse circuit with neat sketch.

6. Attempt any FOUR: 16

(a) State at least four advantages and disadvantages of pneumatic systems.

(b) Draw symbol of unloading valve and sequence valve.

(c) Enlist the hydraulic oil manufacturer’s in India.

(d) Enlist applications of hydraulic system.

(e) Explain pneumatic circuit for speed control of single acting cylinder with neat sketch.

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