

'I' Scheme

Sample Question Paper

Program Name : Diploma in Plastic Engineering

Program Code : PS

Semester : Third

Course Title : Hydraulics

Marks : 70

22349

Time: 3 Hrs.

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.

Q.1) Attempt any FIVE of the following.

10 Marks

- a) Define 'Compressible fluid' and 'Incompressible fluid'.
- b) List any four essential properties of hydraulic oil.
- c) List two speed control hydraulic circuits for plastic processing machines.
- d) Draw symbol of FRL unit.
- e) Draw symbol of unidirectional and bidirectional air motor.
- f) State one application of each meter in and meter out pneumatic circuits used in plastic processing.
- g) State need of hydropneumatic.

Q.2) Attempt any THREE of the following.

12 Marks

- a) List any eight applications of hydraulic system in plastic processes.
- b) (i) List any four types of hydraulic pumps. (ii) List any four types of actuators.
- c) State any four faults and their remedies in hydraulic circuit for plastic processing machine.
- d) Explain with sketch general layout of hydraulic system.

Q.3) Attempt any THREE of the following.

12 Marks

- a) Explain with sketch working of gear pump.
- b) Compare reciprocating and rotary air compressor used in pneumatic circuits.
- c) Explain speed control of unidirectional pneumatic motor.
- d) State two merits and two demerits of hydropneumatic system.

Q.4) Attempt any THREE of the following.

12 Marks

- a) Select suitable pneumatic circuit for sequencing of two air cylinders based on time delay. Justify your answer with sketch.
- b) Design hydropneumatic circuit for automation of plastic processing industry.
- c) Select suitable control valve for very fast retraction of single acting cylinder to save cycle time. Justify your answer with sketch.
- d) Select suitable pneumatic circuit for vacuum forming machine. Justify your answer with sketch.
- e) Select suitable speed controlling hydraulic circuit for negative type of loading. Justify your answer with sketch.

Q.5) Attempt any TWO of the following.

12 Marks

- a) Explain construction and working of meter in hydraulic circuit
- b) Explain with neat sketch the working of push button operated 5 / 2 direction control valve used in pneumatic circuit.
- c) Explain construction and working of sequencing hydraulic circuit. for forward stroke of two double acting cylinder.

Q.6) Attempt any TWO of the following.

12 Marks

- a) Select pump for plastic processing machine for discharge 750 lpm , overall efficiency 96 % , speed 3000 rpm. and justify your answer with sketch.
- b) Select proper flow control valve for pneumatic circuit allowing free flow in one direction and restricted flow in reverse direction. Justify your answer with sketch.
- c) Select suitable hydraulic circuit for compression moulding machine. Justify your answer with sketch.

'T' Scheme

Sample Test Paper - I

Program Name : **Diploma in Plastic Engineering**
Program Code : **PS**
Semester : **Third**
Course Title : **Hydraulics**
Marks : **20**

22349

Time: 1 Hour

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.

Q.1 Attempt any FOUR.

08 Marks

- (a) List any four applications of hydraulic system in plastic processes.
- (b) List any four applications of pneumatic system in plastic processes.
- (c) Define any two essential properties of hydraulic oil.
- (d) List any four types of actuators.
- (e) List any four faults in hydraulic system for plastic processing machine.
- (f) Sketch regenerative hydraulic circuit.

Q.2 Attempt any THREE.

12 Marks

- a) Compare hydraulic and pneumatic system. (Any four points)
- b) Explain with sketch general layout of pneumatic system.
- c) Compare spool and poppet type of direction control valves.
- d) Select variable displacement pump for plastic processing and justify with sketch.
- e) Explain construction and working of bleed off hydraulic circuit.
- f) Select suitable hydraulic circuit for holding loaded vertical cylinder in extended position without creeping in downward direction. Justify your answer with sketch.

'T' Scheme

Sample Test Paper - II

Program Name : Diploma in Plastic Engineering
Program Code : PS
Semester : Third
Course Title : Hydraulics
Marks : 20

22349

Time: 1 Hour

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.

Q.1 Attempt any FOUR.

08 Marks

- a) List four types of air compressors used in pneumatic circuits
- b) List any four accessories used in pneumatic circuits.
- c) List two methods of achieving sequencing of pneumatic actuators
- d) Draw sketch for control of single acting cylinder pneumatic circuit using 3 x 2 DC valve.
- e) List two types of control valves with their function used in pneumatic circuits.
- f) List two applications of hydropneumatic.

Q.2 Attempt any THREE.

12Marks

- a) Explain with sketch working of reciprocating air compressor.
- b) Select suitable control valve for very fast retraction of single acting cylinder to save cycle time. Justify your answer with sketch.
- c) Explain speed control of bidirectional pneumatic motor.
- d) Select suitable pneumatic circuit for sequencing of two air cylinders based on time delay. Justify your answer with sketch.
- e) Explain with sketch working of double acting air cylinder.
- f) Design hydropneumatic circuit for any plastic processing application.