

GANPAT UNIVERSITY
B. Tech. Semester: VIth (Mechatronics) Engineering
Regular Examination May – June 2014
Hydraulics & Pneumatics Systems 2MC603

Time: 3 Hours

Total Marks: 70

- Instruction:**
1. All questions are compulsory
 2. Figure right to the questions indicates full marks.
 3. Use pencil to draw figures and give proper notations.
 4. Give answers to the point.
 5. Write answers of **SECTION – I** and **SECTION – II** in separate answer sheets.

SECTION – I

Que. – 1

12

- (a) Define positive displacement pump and explain working of screw pump with internal construction, mention its advantages and disadvantages.
- (b) Draw neat and clean sketch of 4/3 push rod spring return type direction control valve and describe its working principal in detail.

OR

Que. – 1

12

- (a) With neat and clean sketch explain working principal of vane pump, mention its advantages and disadvantages.
- (b) Draw neat and clean sketch of 3/2 push rod spring return type direction control valve and describe its working principal in detail.

Que. – 2

- (a) Why pressure relief valve is necessary in hydraulic system? Draw its complete internal construction and explain its working with its symbol. 6
- (b) In which condition pilot operation is required? Describe pilot operated sequence valve with neat and clean figure. 5

OR

Que. – 2

- (a) With neat and clean figure describe working principal of flow control valve with its symbol. 6
- (b) Mention working principal of gear motor with figure. 5

Que. – 3 Attempt any three

12

- (a) Draw a hydraulic circuit to actuate two cylinders with equal speed with all notations.
- (b) Draw a hydraulic circuit to operate cylinder no 4 from given 5 cylinders connected with each other by tandem center valve.
- (c) Draw a hydraulic circuit for rapid advance, slow feed and, rapid return system.
- (d) Draw a hydraulic circuit for check valves in bridge with pressure compensated valve to control the motion of actuator in TO & FRO motion.

SECTION - II

- Que. - 4 12
- (a) Enlist advantages of pneumatic systems and specify its application area.
 - (b) Give detail classification of air compressor.
- OR
- Que. - 4 12
- (a) Explain working principal of 5/2 pilot operated direction control valve with neat sketch
 - (b) Explain time delay valve with figure and give its symbol.
- Que. - 5
- (a) Explain liquid ring compressor with neat and clean figure. 6
 - (b) With internal construction describe air filter and its function with symbol. 5
- OR
- Que. - 5
- (a) Explain Logic function valves with neat and clean figure with its symbols. 6
 - (b) With internal construction describe pressure regulator and its function. 5
- Que. - 6 12 Attempt any three
- (a) Explain cushion assembly for pneumatic cylinder with diagram.
 - (b) Draw a pneumatic circuit for meter out for forward stroke.
 - (c) Draw a pneumatic circuit to show function of quick exhaust valve.
 - (d) Draw a pneumatic circuit for sequencing of (a) single acting cylinder and (b) double acting cylinder.

END OF PAPER