

# CBCS SCHEME

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15ME72

## Seventh Semester B.E. Degree Examination, Aug./Sept.2020 Fluid Power Systems

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. With the help of sketch explain the components of fluid power system. (08 Marks)  
b. Define Pascal's law and solve the following problem. [Refer Fig.Q1(b)]

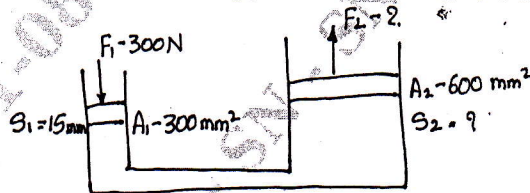


Fig.Q1(b)

Find F<sub>2</sub> and S<sub>2</sub>.

(08 Marks)

OR

- 2 a. With the help of neat sketch explain  
(i) Suction line filter (ii) Pressure line filter. (06 Marks)  
b. Write a note on the following :  
(i) O-Rings (03 Marks)  
(ii) Piston Cup Rings (03 Marks)  
(iii) Heat Exchanger. (04 Marks)

### Module-2

- 3 a. With the help of neat sketch explain Internal Gear Pump. (08 Marks)  
b. A hydraulic pump has displacement volume of 90 cm<sup>3</sup> and delivers 82 lpm at 1000 rpm and 7 MPa. If the i/p torque delivered is 102 N-m. Find Volumetric efficiency, Mechanical efficiency, overall efficiency and theoretical torque required to operate the pump. (08 Marks)

OR

- 4 a. With the help of neat sketch explain cushioning of hydraulic cylinders. (08 Marks)  
b. A hydraulic motor has 100 cm<sup>3</sup> volumetric displacement. If it has a pressure rating of 140 bars and receives oil from a 0.001 m<sup>3</sup>/s theoretical flow rate pump. Find  
(i) Speed (ii) Theoretical torque (iii) Theoretical power. (08 Marks)

### Module-3

- 5 a. With the help of neat sketch explain compound pressure relief valve. (08 Marks)  
b. With the help of neat circuit explain sequencing of cylinders in a hydraulic system. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42+8=50, will be treated as malpractice.

OR

- 6 a. With the help of neat sketch explain 3 position 4 way direction control valve with closed centre configuration. (08 Marks)
- b. With the help of neat sketch explain application of counter balance valve in a hydraulic system (Counter balance circuit) (08 Marks)

**Module-4**

- 7 a. What are the advantages, disadvantages and applications of pneumatic system. (07 Marks)
- b. With the help of neat sketch explain FRL unit. (09 Marks)

OR

- 8 a. With the help of neat sketch explain pneumatic cylinder mounting methods. (08 Marks)
- b. With the help of neat sketch explain quick exhaust valve. (08 Marks)

**Module-5**

- 9 a. With the help of neat circuit explain OR gate system. (08 Marks)
- b. With the help of neat circuit explain coordinated motion control system. (08 Marks)

OR

- 10 a. Explain supply air and air exhaust throttling. (08 Marks)
- b. With a neat sketch explain solenoid controlled pilot operated direction control valve. (08 Marks)

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