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)]

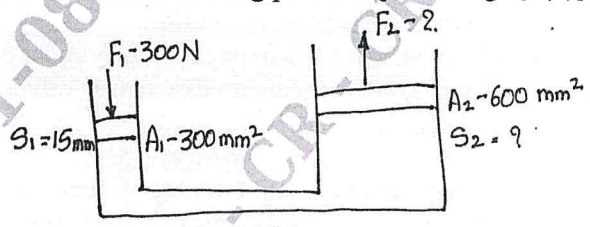

Fig.Q1(b)

Find F_2 and S_2. **(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^3 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^3 volumetric displacement. If it has a pressure rating of 140 bars and receives oil from a 0.001 m^3/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)**

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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