CBCS SCHEME

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15ME72

Seventh Semester B.E. Degree Examination, Dec.2019/Jan.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. Define Pascal's law and its applications. **(06 Marks)**

b. Brief the various components of hydraulic system and its fluid power symbol. **(06 Marks)**

c. What are the four primary functions of a hydraulic fluid? Name the various fluid properties that a fluid should possess. **(04 Marks)**

OR

2 a. With a neat sketch, explain the working of a hydraulic filter. **(06 Marks)**

b. What is the purpose of seals in fluid power system? List the various types of seals used on fluid power system. **(06 Marks)**

c. Brief the various advantages of fluid power system. **(04 Marks)**

Module-2

3 a. With a neat sketch explain the working of external gear pump. **(06 Marks)**

b. Classify the various types of accumulators. Explain the construction and working of bladder type of accumulator. **(06 Marks)**

c. A vane pump is to have a volumetric displacement of 82 cm^3. It has a rotor diameter of 5 cm, a cam ring diameter of 7.5 cm, and a vane width of 4 cm. What must be the eccentricity? What is the maximum volumetric displacement possible? **(04 Marks)**

OR

4 a. Explain the working of hydraulic cylinder cushioning with a neat sketch. **(06 Marks)**

b. What are the various types of hydraulic cylinder mountings? Brief them with a neat sketch. **(06 Marks)**

c. A hydraulic motor has a 100 cm^3 volumetric displacement. If it has a pressure rating of 140 bar and receives oil from a 0.001 m^3/sec theoretical flow rate pump, find the motor: (i) Speed (ii) Theoretical torque (iii) Theoretical KW power **(04 Marks)**

Module-3

5 a. Brief the construction feature and working of pressure relief valve. **(06 Marks)**

b. Explain the regenerative circuit and its application. **(06 Marks)**

c. With a neat sketch brief the working of check valve. **(04 Marks)**

OR

6 a. Explain the working of 4/2 manually operated direction control valve with a neat sketch. **(06 Marks)**

b. With a neat circuit explain the working of sequencing hydraulic circuit and its application. **(06 Marks)**

c. Explain the working of metering in hydraulic circuit with a suitable sketch. **(04 Marks)**

Module-4

7 a. Explain the working of pneumatic filter with a neat sketch. **(06 Marks)**

b. Brief the various components of pneumatic system and its fluid power symbol. **(06 Marks)**

c. Brief the working of quick exhaust valve. **(04 Marks)**

OR

8 a. With a neat sketch explain the construction and working of pneumatic lubricator. **(06 Marks)**

b. Explain the working of single vane rotary cinder with a suitable sketch. **(06 Marks)**

c. With a neat sketch explain the working of shuttle valve. **(04 Marks)**

Module-5

9 a. With a suitable pneumatic circuit, explain the indirect actuation of double acting cylinder using memory valve. **(10 Marks)**

b. Explain the controlling of double acting pneumatic cylinder using solenoid operated direction valve with a circuit. **(06 Marks)**

OR

10 a. Explain the sequencing of two cylinders A and B using cascading method circuit for the cylinder sequence $A^{+}B^{+}B^{-}A^{-}$. **(10 Marks)**

b. Design a suitable electro pneumatic circuit to control of a double acting cylinder using a single limit switch. **(06 Marks)**

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