15MT53

USN

Fifth Semester B.E. Degree Examination, Dec.2023/Jan.2024
Hydraulics and Pneumatics

Time: 3 hrs.   Max. Marks : 80

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

Module-1

1 a. State Parcal's law. With a neat sketch, explain the basic hydraulic power system. **(08 Marks)**
   b. With a neat sketch, explain the construction and working of external gear pump. **(08 Marks)**

OR

2 a. With a neat sketch, explain the operation of a vane pump. **(08 Marks)**
   b. Explain the advantages, limitations and applications of hydraulic systems. **(08 Marks)**

Module-2

3 a. Explain briefly with figure hydraulic cylinder cushioning. **(08 Marks)**
   b. Write a note on hydraulic motor performance. **(08 Marks)**

OR

4 a. Explain briefly with neat figure 4-way and 3-way directional control valve. **(08 Marks)**
   b. Draw the cross section of pressure reducing valve and briefly explain how it operates. **(08 Marks)**

Module-3

5 a. Explain with a neat circuit diagram, the working of double pump hydraulic system. **(08 Marks)**
   b. What are hydraulic accumulators? Sketch and explain dead weight or gravity accumulator. **(08 Marks)**

OR

6 a. What are the desirable properties of hydraulic oil? Explain them. **(08 Marks)**
   b. Explain static and dynamic seals with examples. **(08 Marks)**

Module-4

7 a. With neat sketch explain the construction and working of pneumatic filter, regulator and lubricator unit and mention its importance. **(10 Marks)**
   b. Mention the applications of 3/2 way puppet valve and explain its operation with a neat sketch. **(06 Marks)**

OR

8 a. Explain with the help of neat sketch the construction and working cushioned cylinder. **(08 Marks)**
   b What is supply and exhaust air Throttling explain with necessary circuit diagram. **(08 Marks)**

Module-5

9 a. Explain cascade method of pneumatic circuit design. **(08 Marks)**
   b. Write a note on logic gates used in pneumatic applications. **(08 Marks)**

OR

10 a. Explain the working of Solenoid control of direction control valve. **(08 Marks)**
   b. Explain control circuit for single acting cylinders with circuit diagram. **(08 Marks)**

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