Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **14ME2007** | **Duration :** | **3hrs** |
| **Sub. Name :** | **FLUID POWER CONTROL ENGINEERING** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course Outcome** | **Marks** | |
| 1. | a. | Briefly discuss the merits, demerits and applications of hydraulics and pneumatics systems. | CO3 | 10 | |
| b. | Illustrate the elements of closed loop control system with a neat block diagram. | CO3 | 10 | |
| **(OR)** | | | | | |
| 2. | a. | Explain the working of external gear pump and Lobe pumps with neat sketches. | CO3 | 16 | |
| b. | A pump has displacement volume of 100 cm3. It delivers 0.0015m3/s at 1000 rpm and 70 bars. If the prime mover input torque is 120 N.m. Find (i) the overall efficiency of the pump and (ii) theoretical torque required to operate the pump. | CO3 | 4 | |
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| 3. | a. | Illustrate the working of piston motor with neat sketch, and list out its advantages, disadvantages and applications. | CO3 | 10 | |
| b. | A hydraulic motor has a displacement of 164 cm3 and operates with a pressure of 70 bars and a speed of 2000 rpm. If the actual flow rate consumed by the motor is 0.006 m3/s and the actual torque delivered buy the motor is 170 N.m. Find (i) volumetric, mechanical and overall efficiencies of the motor and (ii) the actual kW delivered by the motor. | CO3 | 10 | |
| **(OR)** | | | | | |
| 4. | a. | Explain briefly the working of three position, four way directional valve with various center flow path configurations. | CO1 | 12 | |
| b. | Draw the symbols for pressure reducing valve, unloading valve, counter balance valve and break valves. | CO2 | 8 | |
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| 5. | a. | Draw the regenerative circuit and name the components. | CO4 | 5 | |
| b. | Discuss the three types of speed control circuits for a hydraulic cylinders | CO4 | 15 | |
| **(OR)** | | | | | |
| 6. | a. | Discuss on the Wall attachment phenomenon. | CO1 | 8 | |
| b. | Explain briefly the working of three fluidic sensors with neat sketches. | CO1 | 12 | |
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| 7. | a. | Discuss the working of four types of accumulators with neat sketches. | CO3 | | 16 |
| b. | Draw a hydraulic circuit where an accumulator is used as an auxiliary power source. | CO3 | | 4 |
| **(OR)** | | | | | |
| 8. | a. | Discuss briefly the various types of fluidic logics. | CO1 | | 6 |
| b. | Design a Fluidic box-sorting system circuit and explain the control of a conveyor that moves and fills the container. | CO4 | | 14 |
|  | | **Compulsory**: |  | |  |
| 9. | a. | Discuss about Boolean algebra used in fluid power logic circuits. | CO4 | | 10 |
| b. | Design and explain the function of a pneumatic circuit for the sequence of A+B+A-B- | CO4 | | 10 |