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Seventh Semester B.E. Degree Examination, July/August 2021

Hydraulics and Pneumatics

Time: 3 hrs.

Max. Marks:100

**Note : 1. Answer any FIVE full questions.
2. Missing data may suitably be assumed.**

- 1 a. State Pascal's Law. List its applications. (08 Marks)
b. With a neat sketch, explain the principle of Operation of External gear pump. (12 Marks)
- 2 a. A hydraulic motor has a volumetric displacement of 123cm^3 . Operating at a pressure of 60 bar and speed 180 rpm. If the actual flow rate consumed by the motor is $0.004\text{m}^3/\text{sec}$ and actual torque delivered by the motor is 100N-m. Find the actual power delivered by the motor and efficiencies like η_{ie} , η_m , η_o . (12 Marks)
b. What are the factors influencing while selecting of Pump? Explain. (08 Marks)
- 3 Explain with a neat sketch and working of the following flow control valve. (20 Marks)
 - a. Sliding spool valve.
 - b. Globe valve.
 - c. Gate valve.
 - d. Needle valve.
- 4 a. Deduce the regenerative speed of a cylinder in a regenerative circuit. (08 Marks)
b. Explain with a neat circuit diagram of Gravity return cylinder (single acting) and spring return cylinder. (12 Marks)
- 5 a. What are the steps involved in building a power hydraulic system? Discuss. (10 Marks)
b. List out the important elements of a reservoir system and explain the functions of each. (10 Marks)
- 6 a. What is a Pneumatic actuator and how they are classified? Explain any one of them. (10 Marks)
b. Explain with a neat sketch of a C – shaped housing type rodless cylinder. (10 Marks)
- 7 a. With a neat line diagram, explain the working of a 4/2 poppet valve. (10 Marks)
b. Draw the circuit diagram of reversal of double acting using limit switch and without limit switch. Explain. (10 Marks)
- 8 a. What is a Compressor? Explain the working principle of Compressor. (10 Marks)
b. With a neat sketch, explain the working of a liquid ring compressor. Why it is so called? (10 Marks)
