S.B. Roll. No……

HYDRAULICS AND PNEUMATICS
4th Exam/Mech./4853/Jun'2022
(For 2018 Batch Onwards)

Duration: 3Hrs. **M.Marks:75**

SECTION-A

Q1. Give answer in one line. **15x1=15**

a. What is an ideal fluid?
b. Define Viscosity.
c. What is specific gravity?
d. Define Atmospheric pressure.
e. What is Uniform flow?
f. Define Turbulent flow.
g. If flowis laminar, then what would be the Reynold's number?
h. What is knocking in pipes?
i. How loss of pressure head varies with velocity in laminar flow?
j. Define Overall efficiency of a turbine.
k. What is Flash point of hydraulic oil.
l. Where are dynamic seals being used in a hydraulic system?
m. What is swept volume of an air compressor?
n. Name any two seal materials commonly used in hydraulic systems.
o. Define capillarity.

SECTION-B

Q2. Attempt any six questions. **6x5=30**

i. Explain the concept of Surface tension.
ii. A pipe contains an oil of specific gravity 0.85. A differential manometer connected at the two points A and B of the pipe shows a difference in mercury level as 22 cm. Find the difference of pressure head at the two points. (Specific gravity of mercury is 13.6)
iii. Water is flowing through a pipe of 7 cm diameter under a pressure of 32.45 N/cm^2 (gauge) and with mean velocity 3 m/s. finds the total head or total energy per unit weight of the water at a cross-section which is 6 m, above the datum line.
iv. Write a short note on Water hammering in pipes.
v. What is Cavitation? Also write the precautions taken to prevent cavitation.
vi. What role does hydraulic oil plays in a hydraulic system?
vii. Write down the applications of Air cylinders.
viii. Discuss the loss of head in pipe due to sudden enlargement.
ix. Explain the working of Francis turbine.

SECTION-C

Q3. Attempt any three questions. **3x10=30**

a. Explain the applications of Bernoulli's theorem.
b. What is hydraulic ram? Also write down its characteristic features.
c. Differentiate between Centrifugal pump and reciprocating pump.
d. State and prove Pascal's law. Also write down its applications.
e. Explain working and construction of Air filter with neat schematic diagram.