SRINIX COLLEGE OF ENGINEERING

2nd INTERNAL EXAMINATION-2021-22

Subject-**FMHM**   Semester-3**RD**   Branch-**CE+ME**

Full Mark-**100**   Time-2.30Hrs

PART-A

ANSWER ALL THE QUESTIONS   **[2X10]**

1.
a) Define specific weight and specific volume of a fluid.
b) Differentiate between absolute pressure and gauge pressure.
c) State the total pressure and centre of pressure.
d) Define the term buoyancy and center of buoyancy.
e) What is stream line flow?
f) Define stream function.
g) Write the expression for the discharge through venturimeter.
h) Define hydraulic gradient line.
i) State the difference between a turbine and pump.
j) Mention the classification of turbine according to the type of energy at inlet.

ANSWER ANY EIGHT PART-B   **[6×8=48]**

2.
a) Explain about the classification of fluids.
b) An oil of specific gravity 0.8 is contained in a vessel. At a point the height of oil is 30m find the corresponding height of water at that point.
c) Determine the total pressure on a circular plate of diameter 1.5 m which is placed vertically in water in such a way that the center of the plate is 3 m above below the free surface of water.
d) Distinguish between 1) steady flow and unsteady flow 2) uniform flow and non-uniform flow.
e) The velocity potential function is given by $\emptyset = 5(x^2 - y^2)$, calculate the velocity components at the point (5,6).
f) The diameters of a pipe at the sections 1 and 2 are 15 cm and 20 cm respectively. Find the discharge through the pipe if the velocity of water flowing throughthe pipe at section 1 is 6 m/s. Also determine the velocity at section 2.
g) Find the loss of head when a pipe of diameter 150 mm is suddenly enlarged to a diameter of 300mm. The rate of flow of water through the pipe is 250 lit/s.
h) Develop an expression for the power transmission in fluid flow through pipes.
i) Illustrate the different types of efficiency of a turbine.

j) Explain briefly about indicator diagram of reciprocating pump.

ANSWER ANY TWO   **PART-C**   **[16×2]**

3. The space between two square flat parallel plates is filled with oil. Each side of the plate is 60 cm. The upper plate, which moves at 2.5 m/s, requires a force of 98.1 N to maintain the speed. Determine the dynamic viscosity of the oil is 0.95.

4. A fluid flow is given by V=$x^2yi + y^2zj - (2xyz + yz^2)k$ prove that it is a case of possible steady incompressible fluid flow. Calculate the velocity and acceleration at the point (2, 1, 3).

5. With a neat sketch, explain the constructional features of different parts of a centrifugal pump.