REGISTRATION NUMBER | | | | | | | | | | |

SRINIX COLLEGE OF ENGINEERING

2nd INTERNAL EXAMINATION-2020

Subject-**FMHM** Semester-3rd Branch-**CIVIL**

Full Mark- Time-

ANSWER ANY TEN QUESTIONS (PART-A) **[2X10]**

1) (a) Fluids which do not follow the linear relationship between shear rate of deformation are termed as ……. Fluids.
   (b) The manometers are suitable for comparatively……. pressure.
   (c) An ice cube is floating in glass of water as the cube melts the water level…….
   (d) A……. is an imaginary line within the flow so that the tangent at any point on it indicates the velocity at that point.
   (e) Write down the formula to calculate the discharge of venturimeter.
   (f) Surface tension increases with……. In temperature.
   (g) Equation of continuity based on the principle of conservation of……..
   (h) The Renoylds no for flow of oil in a certain pipe is 640. Determine the Darcy-Weisbach factor f for this flow.
   (i) Write down the formula to calculate the loss of head at entrance of pipe.
   (j) Define equivalent of pipe.
   (k) Differentiate between ideal fluid and real fluid.
   (l) The weight per unit volume of liquid at standard temperature and pressure is called as……

ANSWER ANY FOUR QUESTIONS (PART-B) **[5×4]**

2) Discuss with a neat diagram showing various positions of G, B and M for different stability conditions for floating and submerged body.
3) Write a short note of the following
   a) Fluid classification
   b) Flow net
4) The velocity components in a two dimensional flow are
   $U=y^3+6x-3x^2y$ $V=3xy^2-6y-x$
   Check whether the flow satisfies continuity and irrotationality.
5) Explain the main parts of centrifugal pump.

6) Write a short note on pitot tube.

ANSWER ANY TWO QUESTIONS (PART-C) **[10×2]**

7) Two large fixed parallel planes are 12 mm apart. The space between the surfaces is filled with oil of viscosity 0.972 Ns/m^2. A flat thin plate 0.25m^2 area moves through the oil at a velocity of 0.3m/s. Calculate the drag force
   a) When the plate is equidistant from both the planes.
   b) When the thin plate is at a distance 4mm from both the planes.

8) The velocity potential function (Φ) is given by an expression

$$\Phi = \frac{-xy^3}{3} - x^2 + \frac{x^3y}{3} + y^2$$

   a) Find the velocity components in x and y direction .
   b) Show that Φ represents a possible case of flow.

9) Water is flowing through a pipe having 300 mm and 200 mm at the bottom and upper end respectively. The intensity of pressure at the bottom end is 24.525 N/$cm^2$and the pressure at the upper end is 9.81N/cm^2. Determine the difference in datum head if the rate of flow through pipe is 40 lit/sec.