REGISTRATIONNUMBER | | | | | | | | | | |

SRINIXCOLLEGE OFENGINEERING

1st INTERNALEXAMINATION-2021-22

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

FullMark-**60** Time-**2hrs**

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

1) (a)Fluidswhichdonotfollowthelinearrelationshipbetweenshearrateofdeformationaretermed as ..... Fluids.
   (b) Themanometersaresuitable forcomparatively ..... pressure.
   (c) An icecubeisfloatinginglassofwaterasthe cubemelts the waterlevel…….
   (d) Write down the formula to calculate the discharge of venturimeter.
   (e) Surfacetensionincreaseswith .....intemperature.
   (f) TheReynoldsnoforflowofoilinacertainpipeis640.DeterminetheDarcy-Weisbachfactorfforthisflow.
   (g) Write downtheformulatocalculatethelossofheadatentranceofpipe.
   (h) Defineequivalentofpipe.
   (i) Differentiatebetweenidealfluid andrealfluid.
   (j) Theweightperunitvolumeofliquidatstandardtemperatureandpressureiscalledas……

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

2) Discusswithaneatdiagramshowingvariouspositionsof G,BandMfordifferentstabilityconditions forfloatingandsubmergedbody.
3) Writeashortnoteofthefollowing
   a) Fluidclassification
   b) Flownet
4) ThevelocitycomponentsinatwodimensionalflowareU=y^3+6x-$3x^2y$ V=$3xy^2$-6y-x
   Checkwhethertheflowsatisfiescontinuityandirrationality.
5) An orifice meter with diameter 15 cm is inserted in a pipe of 30 cm diameter. The pressure difference measured by a mercury oil differential manometer on the two sides of the orifice meter gives a reading of 50 cm of Hg. Find the rate of oil of sp. Gravity 0.9 when the coefficient of discharge of meter is 0.64

6) Write a short note on pitot tube.

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

7) Twolargefixedparallelplanesare12mmapart.Thespacebetweenthesurfacesisfilledwithoil of viscosity 0.972 Ns/m^2. A flat thin plate 0.25m^2 area moves through the oil at a velocityof0.3m/s.Calculatethedragforce
   a) Whenthe plate isequidistantfromboththeplanes.
   b) Whenthethinplateisatadistance4mmfromboththeplanes.

8) Thevelocitypotentialfunction(Φ)isgivenby anexpression

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

   a) Findthevelocitycomponentsinxandydirection.
   b) ShowthatΦrepresentsapossiblecaseofflow.

9) Water is flowing through a pipe having 300 mm and 200 mm at the bottom and upper endrespectively.Theintensityofpressureatthebottomendis24.525N/cm^2andthepressureatthe upper end is 9.81N/cm^2. Determine the difference in datum head if the rate of flowthroughpipeis40lit/sec.