

P-148

Total Pages : 3

Roll No.

MT-607

Viscous Fluid Dynamics-II

MA/MSc Mathematics (MAMT/MSCMT)

4th Semester Examination, 2023 (June)

Time : 2 Hours]

[Max. Marks : 35

Note : This paper is of Thirty Five (35) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

SECTION-A

(Long Answer Type Questions)

Note : Section 'A' contains Five (05) long answer type questions of Nine and Half ($9\frac{1}{2}$) marks each. Learners are required to answer any Two (02) questions only.

($2 \times 9\frac{1}{2} = 19$)

1. Discuss the steady flow of viscous incompressible fluid between two porous parallel plates.
2. Discuss the plane Couette flow with transpiration.
3. Discuss the temperature distribution between two concentric rotating cylinder.
4. Explain Stoke's flow past a sphere.
5. Derive two dimensional boundary layer equation for the viscous incompressible fluid flow past a thin plate.

SECTION-B

(Short Answer Type Questions)

Note : Section 'B' contains Eight (08) short answer type questions of Four (04) marks each. Learners are required to answer any Four (04) questions only. (4×4=16)

1. Write a note on Prandtl's Boundary layer theory.
2. Discuss the temperature distribution in the plane Couette flow when the moving plate is at a higher temperature than the stationary plate.
3. Discuss the Oseen's flow past a sphere.

4. Discuss the temperature distribution in plane-couette flow.
 5. Discuss the temperature distribution in pipe.
 6. Write a note on characteristic parameters of boundary layer theory.
 7. Write a note on Thermal Boundary layer theory.
 8. Obtain Crocco's first integral for $Pr = 1$.
-

