A–136

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MT–607

M.A./M.Sc. MATHEMATICS (MAMT/MSCMT)

(Viscous Fluid Dynamics–II)

4th Semester Examination, 2024 (June)

Time : 2:00 Hrs. Max. Marks : 70

Note* :–** This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given therein. ***Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

Section–A

(Long Answer Type Questions) 2×19=38

***Note* :–** Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

1. Discuss the starting flow in plane Couette motion.

2. Discuss the temperature distribution of plane-Couette flow with transpiration cooling.

3. What is Oseen flow ? Compare Oseen's equation from Stake's equation.

4. Discuss former and letter situations to Prandtl's work. State Prandtl's boundary layer theory.

5. Derive the boundary layer equation by Magnitude Approach.

Section–B

(Short Answer Type Questions) 4×8=32

***Note* :–** Section 'B' contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. Discuss the temperature distribution is Generalized Plane Couette Flow.

2. Discuss Oseen's stream function.

3. Write a short note on boundary layer theory.

4. Discuss Drag on the surface of the sphere in Stoke's flow past a sphere.

5. Discuss the application of boundary layer theory.

6. Define Suction, Injection and Starting flow.

7. Define the following :

   (a) Displacement thickness 'δ_1'

   (b) Skin friction

8. How to starting flow is an unsteady motion ?

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