

**M.Sc. 4th Semester Examination, 2025**

**APPLIED MATHEMATICS**

*( Lab : Dynamical Oceanology )*

[Practical]

PAPER — MTM-498B

*Full Marks : 25*

*Time : 2 hours*

Answer **one** question from each Group

*The figures in the right hand margin indicate marks*

*Candidates are required to give their answers in their own words as far as practicable*

*Illustrate the answers wherever necessary*

Questions are to be selected by lottery

**GROUP — A**

1. Given 20 instantaneous data measurements points for 5 min, plot and discuss the distribution of normalized stream-wise, transverse and bottom-normal mean velocities. 10

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2. Given 20 instantaneous data measurements points for 5 min, plot and discuss the distribution of normalized stream-wise, transverse and bottom-normal turbulence intensities. 10
3. Given 20 instantaneous data measurements points for 5 min, plot and discuss the distribution of normalized longitudinal, transverse and vertical normal stresses. 10
4. Given 20 instantaneous data measurements points for 5 min, plot and discuss the distribution of normalized longitudinal, transverse and vertical Reynolds shear stresses. 10

#### GROUP – B

5. Using Matlab programming, find out the distribution of probability density function for the given 5 instantaneous data measurements points for 3 min at the bottom wall region. 5

6. Using Matlab programming, find out the distribution of probability density function for the given 5 instantaneous data measurements points for 3 min at the intermediate region. 5
7. Using Matlab programming, find out the distribution of probability density function for the given 5 instantaneous data measurements points for 3 min at the free surface region. 5
8. Using Matlab programming, find out the distribution of joint probability density function for the given 5 instantaneous data measurements points for 3 min at the bottom wall region. 5
9. Using Matlab programming, find out the distribution of joint probability density function for the given 5 instantaneous data measurements points for 3 min at the intermediate region. 5

( 4 )

**10. Using Matlab programming, find out the distribution of joint probability density function for the given 5 instantaneous data measurements points for 3 min at the free surface region.**

**Note book + Viva = 5**  
**Field visit & report = 5**

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