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RNLKWC/P.G./CBCS/IVS/404A/22

2022

APPLIED MATHEMATICS WITH OCEANOLOGY AND
COMPUTER PROGRAMMING

[P.G.]

(M.Sc. Fourth Semester End Examination-2022)

PAPER-MTM 404A

Full Marks: 50

Time: 02 Hrs

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

[Special Paper – OM]

[Computational Oceanology]

Attempt any five questions:

8x5= 40

1. Derive the vorticity equation in the form.

$$\frac{D\underline{\zeta}_a}{Dt} = (\underline{\zeta}_a \cdot \nabla) \underline{V} - \underline{\zeta}_a (\nabla \cdot \Delta) - \nabla \alpha \times \nabla p + \gamma \nabla^2 \underline{\zeta}_a$$

Give the physical interpretation of each term of the equation

2. Derive the equations of geostrophic motion.
3. Discuss the motion of ocean when the wind driven into the baroclinic ocean.
4. Find the phase and group velocities in case of plane Rossby waves.

(2)

5. State the assumption of Stommel model and hence derive the equations of motion.
6. Discuss inertial boundary layer theory.
7. Derive the nodes of Poincare-Kelvin waves.

Internal Assessment –10

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