

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN  
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)  
Chromepet, Chennai - 600 044.

M.Sc.Applicable Mathematics - END SEMESTER EXAMINATIONS - NOV' 2024  
SEMESTER - III

**20PAMCT3009 - Classical Mechanics**

Total Duration : 2 Hrs. 30 Mins.

Total Marks : 60

**Section B**

Answer any **SIX** questions ( $6 \times 5 = 30$  Marks)

1. Explain Lagrange's equation of the motion for Atwood's machine.
2. Describe the Coriolis force.
3. Classify the inertia tensor and the moment of inertia.
4. Interpret the Symplectic approach to canonical transformations.
5. Illustrate shortest distance between two points in a plane.
6. Predict rate of change of a vector.
7. Classify the methods of solving rigid body problems and the Euler equations of motion.
8. Justify Poisson brackets and other canonical invariants.

**Section C**

I - Answer any **TWO** questions ( $2 \times 10 = 20$  Marks)

9. Describe Lagrange's equation from D'Alemberts Principle.
10. Classify Euler-Lagrange differential equations.
11. Organize Euler's theorem.
12. Evaluate Legendre transformations and the Hamilton equations of motion.

II - Compulsory question ( $1 \times 10 = 10$  Marks)

13. Compute the principle of least action.

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