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.Physics - END SEMESTER EXAMINATIONS - NOV' 2024
SEMESTER - I
20PPHCT1002 - Classical mechanics and relativity

Total Duration : 2 Hrs. 30 Mins.   Total Marks : 60

Section B

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

1. Obtain Lagrange' equation of motion.

2. Explain Angular momentum.

3. Give an account of Hamilton Jocobi theory.

4. Compare stable, unstable and neutral equilibrium.

5. Explain relativistic Lagrangian for a free particle.

6. State and prove Kepler's law.

7. Write a short note on Corolis force and dynamics.

8. What are normal coordinates? Explain.

Section C

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

9. Deduce Hamilton's equations from variational principle.

10. Derive an expression for Euler's equations of motion for a rotating rigid body with a fixed point.

11. Derive Equations of motion in terms of Poissons bracket's form.

12. Give an expression the linear triatomic molecule.

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

13. Derive an expression for a four vectors.

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