

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.

B.Sc.Physics - END SEMESTER EXAMINATIONS - APRIL 2025

SEMESTER - II

**22UPHCT2004 - Mechanics**

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

### Section B

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

1. Explain how the acceleration due to gravity( $g$ ) is measured by compound pendulum for different time period of oscillations.
2. Define Bernoulli's theorem? Interpret any one its applications.
3. Classify different kinds of constraints with required example and diagram.
4. Define Phase space and write the Physical significances of Hamiltonian function.
5. Calculate centre of gravity of a solid hemisphere with necessary diagram.
6. Classify the difference between vacuum pumps and Rotary Pump in brief.
7. Derive Lagrange's equation of motion using D' Alembert's principle.
8. Solve the equation of motion of simple pendulum.

### Section C

Answer any **THREE** questions ( $3 \times 10 = 30$  Marks)

9. Explain about bifilar pendulum with neat diagram and illustrate how it is used to measure the value of acceleration due to gravity ( $g$ ).
10. Distinguish between C.G and C.M and also relate the Centre of gravity of a right solid and circular cones.
11. Infer Torricelli's theorem in detail.
12. Predict when will be the Simple pendulum executes simple harmonic motion using Lagrange's equations of motion.
13. Deduce the applications of Hamilton's equations of motion with examples.

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