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Code No. 8527 / CBCS/ Non-CBCS

FACULTY OF SCIENCE

M. Sc. I – Semester (CBCS / Non-CBCS) Examination, December 2013

Subject : Physics and Applied Electronics

Paper – II : Classical Mechanics

Time : 3 Hours

Max. Marks: 80

Note : Answer all questions from Part–A and Part–B. Each question carries 4 marks in Part–A and 12 marks in Part – B.

PART – A (8 x 4 = 32 Marks)
(Short Answer Type)

1. Explain inertial and non-inertial frames.
2. Define four vector. Obtain the components of four velocity.
3. State and explain principle of virtual work.
4. Comment on velocity dependent potentials.
5. Define Poisson brackets. Mention its properties.
6. What are ignorable coordinates? Explain.
7. Discuss on normal coordinates.
8. Write a short note on principal axis transformation.

PART – B (4 x 12 = 48 Marks)
(Essay Answer Type)

- 9.(a) Explain how linear momentum and angular momentum will be conserved for a system of particles.
- OR**
- (b) Deduce Lorentz transformation equations in Minkowski space.
- 10.(a) Derive Lagrange's equations of motion from D'Alembert's principles.
- OR**
- (b) State and explain Hamilton's principle and obtain Lagrange's equations from it.
- 11.(a) Obtain Hamilton's canonical equations of motion and apply it to projectile motion of a body.
- OR**
- (b) State and prove principle of least action and discuss its consequences.
- 12.(a) Discuss on the normal frequencies of a vibrating string fixed at both ends.
- OR**
- (b) Analyse free vibrations of a linear triatomic molecule.
