Code No. 2079 / CORE

FACULTY OF SCIENCE

M. Sc. I – Semester Examination, January 2018

121217509003

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 the Pseudo forces.
2 Define Minkowski space and explain
3 Explain virtual displacement and virtual work.
4 State and derive D' Alembert's principle.
5 Derive the Hamilton equation of motion.
6 Explain Canonical transformations.
7 Obtain the Lagrange's equation of motion for small oscillations.
8 Explain principal axis transformation.

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

9 (a) Obtain the Euler's equations of motion for a rigid body.

OR

(b) Discuss Lorentz transformations in four dimensional space with examples.

10 (a) State Hamilton's principles and derive Lagrange's equation from Hamilton's principle.

OR

(b) Explain velocity dependent potentials and dissipation function.

11 (a) What are Canonical coordinates? Derive conditions for transformation to be canonical.

OR

(b) Derive an expression for the Hamilton's equations for motion in Poisson bracket form.

12 (a) Discuss the eigen value equation for small oscillations. How will you obtain the eigen values from this equation.

OR

(b) Define normal coordinates and normal modes and obtain eigen vectors for a linear triatomic molecule.

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