Seat No:_____ **Enrollment No:_____**

PARUL UNIVERSITY

FACULTY OF APPLIED SCIENCE

M.Sc. Summer 2017-18 Examination

Semester: 2 **Date: 09/05/2018**
Subject Code: 11204152 **Time: 10:30 am to 1:00 pm**
Subject Name: Classical Mechanics – II, Electrodynamics and Plasma Physics **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1. A) Essay type/ Brief note. (4x2) (Each of 04 marks) **(08)**

(a) Explain phase trajectories of 2nd order LED

(b) Write a note on Simple pendulum

Q.1. B) Answer the following questions. (Any two)

(a) Short note **(04)**

1.Show that: Phase trajectory in case of SHO with having mass m and force constant k is ellipse and also show that: phase trajectory is circle i we draw gaph of(y/Wo)→x

(b) Discuss non-linear oscillation of simple pendulum and find y(x) **(04)**

(c) Show that : Phase trajectory is hyperbolic curve with y=+_ sigma(o--)x **(04)**

Q.2. A) Answer the following questions.

(a) Short note **(04)**

1. Explain proper time and velocity.

(b) What is logistic map? **(04)**

Q.2. B) Answer the following questions. (Any two)

(a) Short note **(03)**

1.Explain relativistic energy and momentum.

(b) Write a maxwell's equation using langrangian density **(03)**

(c) Write langrangian density, show that total langrangian **(03)**

Q.3. A) Essay type/ Brief note (4x2) (Each of 04 marks) **(08)**

(a) What do you mean by chaos and give example?

(b) Explain Radiation damping in short

Q.3. B) Answer the following questions (Any two)

(a) Short note **(04)**

1. Dispersion in non conductors

(b) Explain dispersion in dilute gases **(04)**

(c) Explain scattering of radiation by a free charge **(04)**

Q.4. A) Answer the following questions.

(a) Short note **(04)**

Write a note on two fluid model

(b) Explain collision in detail **(04)**

Q.4. B) Answer the following questions (Any two)

(a) Short note **(03)**

1. Explain Plasma propulsion

(b) Write a note on MHD **(03)**

(c) Explain controlled thermonuclear reaction **(03)**