

PARUL UNIVERSITY
FACULTY OF APPLIED SCIENCE
M.Sc. Summer 2019 Examination

Semester: 2
Subject Code: 11204152
Subject Name: Classical Mechanics – II, Electrodynamics
and Plasma Physics

Date: 03/04/2019
Time: 10:30 to 1.00 pm
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 Electro dynamics in tensor notation.
 (b) Write a short note on Magnetohydrodynamic(MHD).
- Q.1. B) Answer the following questions (Any two) (04)**
 (a) Short note/ Brief note (2x2)/ Schematically label the figures (2x2) (Each of 02 marks) (04)
 1. Derive work-Energy theorem.
 2. Write a short note on limit cycle.
 (b) Write Short note on Proper time. (04)
 (c) Write Short note on proper velocity. (04)
- Q.2. A) Answer the following questions. (04)**
 (a) Short note/ Brief note (2x2)/ Fill in the blanks. (Each of 02 marks) (04)
 1. Write a short note on strange attractors.
 2. Explain momentum.
 (b) Write a short note on Poincare section. (04)
- Q.2. B) Answer the following questions (Any two) (03)**
 (a) Short note/ Multiple choice questions. (Each of 01 marks) (03)
 1. Define relativistic mechanics.
 2. What is thermonuclear reaction?
 3. Write Lawson criterion.
 (b) Write a Short note on singular point. (03)
 (c) Explain Radiation damping. (03)
- Q.3. A) Essay type/ Brief note (4x2) (Each of 04 marks) (08)**
 (a) Write a short note one Relativistic energy.
 (b) Write Short note on field transform.
- Q.3. B) Answer the following questions (Any two) (04)**
 (a) Short note/ Brief note (2x2)/ Schematically label the figures (2x2) (Each of 02 marks) (04)
 1. Derive the moment equations.
 2. Write equations on One fluid model.
 (b) Short note on The field tensor. (04)
 (c) Short note on nonlinear oscillations. (04)
- Q.4. A) Answer the following questions. (04)**
 (a) Short note/ Brief note (2x2)/ Fill in the blanks. (Each of 02 marks) (04)
 1. Explain Effects of Collisions.
 2. What is stability of Magnetohydrodynamic?
 (b) Write short note on The system of B.B.G.K.Y. Equations (04)
- Q.4. B) Answer the following questions (Any two) (03)**
 (a) Short note/ Multiple choice questions. (Each of 01 marks) (03)
 1. Write Coulomb barrier.
 2. Write two names of plasma devices.
 3. What is plasma propulsion?
 (b) Explain Plasma propulsion. (03)
 (c) Explain Scattering of radiation by a bound charge. (03)