GIET UNIVERSITY, GUNUPUR – 765022

M. Sc. (Second Semester) Examinations, September – 2021

20PHPC201 – Classical Electrodynamics

(Physics)

Time: 2 hrs   Maximum: 50 Marks

(The figures in the right hand margin indicate marks.)
PART – A

Q.1. Answer *ALL* questions   **(2 x 10 = 20 Marks)**

a. Explain different types of instabilities in plasma.
b. What do you mean by skin depth?
c. Write down the boundary conditions for electromagnetic field vectors.
d. What are Alfven waves?
e. What is the physical significance of dispersion relation?
f. What is Rayleigh scattering?
g. Define scattering cross-sections.
h. What is the significance of induction part of radiation electric field?
i. What is kink instability?
j. What is the lowest mode physically possible in TM mode?

PART – B   (6 x 5 = 30 Marks)

Answer *ANY FIVE* the questions   Marks

2. Derive electromagnetic wave equations for potentials and find out the solution by Fourier analysis method. (6)

3. Discuss the propagation of EMW in a rectangular wave guide in TE mode. (6)

4. Find out the expression for fields due to a uniformly moving electron. (6)

5. Derive Larmor formula. (6)

6. Discuss the behaviour of plasma in a magnetic field. (6)

7. Derive magneto hydrodynamics equation for Plasma. (6)

8. Discuss the entire process Thomson scattering with suitable mathematical treatment. (6)

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