(b) Discuss electric dipole and electric quadrupole fields. 7

9. Discuss the following :

(a) Fresnel's amplitude relations 5

(b) Total internal reflection 5

(c) Reflection and transmission co-efficients. 5

Roll No. .....

(07/21-II)

11832

M. Sc. EXAMINATION

(For Batch 2017 & Onwards)

(Second Semester)

PHYSICS

PHY-202

Classical Electrodynamics–I

Time : Three Hours *Maximum Marks :* 70

Note : Attempt *Five* questions in all. Q. No. **1** is compulsory. Attempt *one* question from each Unit.

1. Discuss briefly the following : 2×5=10

(a) Coulomb's Law

(b) Quadrupole Moment

(c) Molecular Polarizability

(d) Skin effect

(e) Brewster's angle.

Unit I

2. Write brief notes on the following :

   (a) Scaler Potential 3

   (b) Vector Potential 4

   (c) Laplace equation 4

   (d) Poisson's equation. 4

3. (a) What do you mean by Magnetostatics ? Derive differential equation of magnetostatics. 8

   (b) Discuss multipole expansion of the energy of charge distribution in an external field. 7

Unit II

4. Discuss the following :

   (a) Electric Susceptibility 4

   (b) Energy of charges in dielectric media 5

   (c) Uniqueness theorem. 6

5. (a) Discuss Clausius-Mossotti relations. 8

   (b) Explain polarization vector Macroscopic equations. 7

Unit III

6. (a) Discuss general expression for electromagnetic field energy. 7

   (b) Explain plane wave in free space and isotropic dielectrics. 8

7. Discuss the following :

   (a) Pointing's theorem 5

   (b) Conservation of energy 5

   (c) Conservation of momentum. 5

Unit IV

8. (a) Give derivation of field equations between parallel plates and propagation parameters. 8