

**PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)**

**BSc DEGREE EXAMINATION DECEMBER 2022  
(Second Semester)**

Branch – **ELECTRONICS**

**ELECTRO MAGNETIC THEORY**

Time: Three Hours

Maximum: 50 Marks

**SECTION-A (5 Marks)**

Answer **ALL** questions

**ALL** questions carry **EQUAL** marks

(5 x 1 = 5)

1. Coulomb is the unit of which quantity?
 

(i) Field strength	(ii) Charge
(iii) Permittivity	(iv) Force
  
2. The net dipole moment of the system is of the magnitude \_\_\_\_
 

(i) $qx2a$	(ii) $2qx2a$
(iii) $qxa$	(iv) $2x(2qx2a)$
  
3. Which of the following is the most conductive element?
 

(i) Copper	(ii) Iron
(iii) Silicon	(iv) Silver
  
4. The Poisson's equation is derived from \_\_\_\_
 

(i) Laplace equation	(ii) Point form of Gauss law
(iii) Thevenin's law	(iv) Kirchhoff's law
  
5. Which of the following inductor will have the least eddy current losses?
 

(i) Air core	(ii) laminated iron core
(iii) Iron core	(iv) Powdered Iron core

**SECTION-B (15Marks)**

Answer **ALL** questions

**ALL** questions carry **EQUAL** marks

(5x3=15)

6. a. Derive an expression for Electric field intensity.  
OR  
b. State and Prove Gauss Law.
  
7. a. Explain the Electric Scalar potential.  
OR  
b. Describe about the Electric Dipole.
  
8. a. Explain the Capacitance of a Parallel plate capacitor.  
OR  
b. Narrate the Dielectric Strength.
  
9. a. State and prove the Stokes theorem.  
OR  
b. State and prove the Biot Savarts law.
  
10. a. Describe about the Inductor.  
OR  
b. Derive an expression for Maxwell's equation in point.

**Cont...**

**SECTION-C(30Marks)**  
Answer ALL questions  
ALL questions carry EQUAL marks (5x6=30)

11. a. State and prove the Coulomb's law.  
OR  
b. Elucidate the Electric field intensity due to uniformly charged disc.
12. a. Enumerate the Potential at any point due to charge distribution.  
OR  
b. Examine the Potential Gradient.
13. a. Discuss briefly about the Polarization.  
OR  
b. Elucidate the functions of Capacitance between parallel wires.
14. a. State and Prove the Divergence theorem.  
OR  
b. Summarize the Steady Magnetic field.
15. a. Enumerate the functions of Inductance.  
OR  
b. Elucidate the Operation of Mutual Inductance.

Z-Z-Z

END