PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2017
(Third Semester)

Branch - **PHYSICS**

ELECTRICITY & MAGNETISM

Time : Three Hours Maximum : 75 Marks

SECTION-A (20 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks (10 x 2 = 20)

1 State Gauss law of electrostatics.
2 Define the terms polarization and charge density.
3 State Thevenin's network theorem.
4 Define the term current density.
5 State Pelitier effect.
6 State Faraday's law of electrolysis.
7 What is meant by peak value Of alternating current?
8 What is a transformer? Give the principle of transformer.
9 Define the terms magnetic permeability and magnetic susceptibility.
10 Explain the term'Hysteresis'.

SECTION - B (25 Marks!

Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks (5 x 5 = 25)

11 a Derive Poison's equation and Laplace's equation, starting from the differential form of Gauss's law.

OR

b Explain Gauss's law for dielectric medium.

12 a Derive the equation of continuity.

OR

b State and explain Norton's theorem.

13 a Discuss the applications of thermodynamics.

OR

b State and explain seebeck effect of thermo electricity.

14 a Distinguish between series and parallel resonant circuit.

OR

b Describe a method of determination of high resistance by leakage using an appropriate circuit diagram.

15 a Explain briefly the properties of dia, para and ferro magnetic materials.

OR

b Write Maxwell's equations of electromagnetism and discuss the significance of the equations.

SECTION - C (30 Marks!

Answer any **THREE** Questions

ALL Questions Carry **EQUAL** Marks (3 x 10 = 30)

16 Define the term 'Electric potential'. Show that the potential difference between any two points in an electric field is given by the line integral of the electric field taken over any path joining those points.
17 Give the principle of potentiometer. Discuss in detail any one application of it with an appropriate circuit diagram.
18 Explain Thomson effect and define Thomson coefficient. Describe an experiment to demonstrate Thomson effect.
19 Explain in detail the growth and decay of current in R- L circuit.
20 Give an account of Langevin's theory of diamagnetism.

7-7-7 END