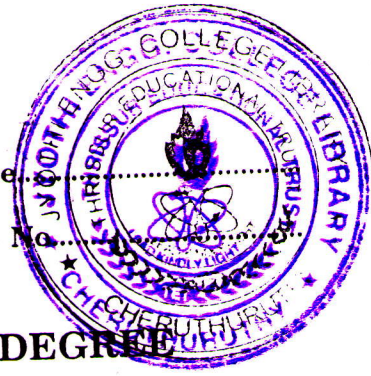


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Reg. No.....



**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, DECEMBER 2008**

EE 2K 503/PTEE 2K 304 - ELECTROMAGNETIC FIELD THEORY

Time : Three Hours

Maximum : 100 Marks

- I. (a) State Stoke's theorem. Give example.
(b) Find the potential inside and outside a spherical shell of radius R which carries a uniform surface charge.
(c) Prove that magnetic forces do not work.
(d) State Biot-Savant's law.
(e) Write short notes on circular polarization.
(f) Derive the wave equations in vacuum.
(g) Write the applications of Smith chart.
(h) Write the law of reflection. (8 × 5 = 40 marks)
- II. (a) Explain the principle of method of images. Give an example to image problem and solve it.
Or
(b) Discuss the solutions of Laplace's equation in one, two and three dimensions.
- III. (a) A short solenoid (length l and radius a , with n_1 turns per unit length) lies on the axis of a very long solenoid (radius b , n_2 turns per unit length). Current I flows in the short solenoid. What is the flux through the long solenoid? Also find the mutual inductance.
Or
(b) Discuss the Faraday's experiments related to electromagnetic induction.
- IV. (a) Derive Maxwells' equations.
Or
(b) Derive the wave equations in conductors.
- V. (a) Derive Brewster's angle.
Or
(b) Define the terms : (i) Group velocity ; (ii) Characteristic impedance ; (iii) SWR. (4 × 15 = 60 marks)