5 Attempt any **two** parts :

(a) A telephone line has R = 30 ohm/m, G = 0, L = 100mH/Km and C = 20 μF/Km at 1 KHz. Obtain Z_0 and γ.

(b) Discuss the formation standing waves on a dissipationless transmission line when

(i) it is terminated in an open circuit.

(ii) it is terminated in a short circuit.

(c) Obtain the equation for constant resistance and constant reactance circles of Smith Chart.

(i) Sketch and lable the circle corresponding to r = 0, r = 1 and r = ∞.

(ii) the x = 0, x = 1 and x = ∞ circles.

———————

PAPER ID : 108501

EEE-501 Printed Pages : 4

Paper ID and Roll No. to be filled in your Answer Book

Roll No.

B. Tech.

(SEM. V) (ODD SEM.) EXAMINATION, 2011-12

ELECTROMAGNETIC FIELD THEORY

Time : 3 Hours] [Total Marks :

*Note : All questions are **compulsory**.*
Each question carries equal marks.

1 Attempt any **four** parts :

(a) If r is the position vector of a point, find Grad r and grad 1/r.

(b) Prove divergence theorem and give its physical significance.

(c) Given a vector function

$A = (3x+c_1z)\,a_x + (c_2x-5z)\,a_y + (4x-c_3y+c_4z)\,a_z$

Calculate c_1, c_2, c_3 and c_4 if A is irrotational and solenoidal.

(d) If $A = \alpha\,a_x+2a_y+10a_z$ and $B = 4\alpha\,a_x+8a_y-2\alpha\,a_z$ find out the value of α for which the two vectors become perpendicular.

(e) Given points A (x=2, y=3, z=–1) and B (r = 4, φ = –50°, z = 2) find the distance A to B.

(f) Find the area of the curved surface using the cylindrical co-ordinates which lies on the right circular cylinder of radius 2 m, height 8 m and $40° \leq \varphi \leq 90°$.