SNS COLLEGE OF TECHNOLOGY

(*An Autonomous Institution*)

COIMBATORE-35

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

19EET201-Field Theory

Question Bank

UNIT- I

INTRODUCTION

PART- A (2 MARKS)

1. What are the source of electric field and magnetic fields?
2. Give any three coordinate systems.
3. Express the value of differential volume in rectangular and cylindrical Co-ordinate systems
4. Write expression for differential length in cylindrical and spherical co- ordinates.
5. What is physical significance of divergence of D.
6. Express the divergence of a vector in the three system of orthogonal Co-ordination.
7. State divergence theorem.
8. State Stoke's theorem.
9. How is the unit vectors defined in three coordinate systems?

PART- B

1 (a) The electric field in a spherical co-ordinate is given by E=(r/5)ar. Show that closedE.dS=(.E)dv.

1(b) State and proof divergence theorem

2. Check validity of the divergence theorem considering the field D=2xy ax +x2ay c/m2 and the rectangular parallelepiped formed by the planes x=0,x=1,y=0,y=2 &z=0,z=3.

3. A vector field D=[5r2/4]Ir is given in spherical co-ordinates. Evaluate both sides of divergence theorem for the volume enclosed between r=1&r=2.

4. Given A= 2r cosIr+rI in cylindrical co-ordinates .for the contour x=0 to1 y=0 to1 , verify stoke's theorem

5. Explain three co-ordinate system.

6. Determine the divergence of these vector fields

i. P=x2yz ax+xy az

ii. Q=sin a+2z a+zcos az

iii. T=(1/r2)cos ar + r sincos a + cos a

7. (a) Discuss about curl of a vector

7. (b) Derive an expression for curl of a vector

7. (c) State stoke's theorem

8. (a) Define divergence, gradient, curl in spherical co-ordinate system with mathematical expression

8. (b) Prove that divergence of a curl of a vector is zero ,using stoke's theorem