

## Tutorial No :- 1

- ① Uniform plane wave at frequency of 300 MHz travels in vacuum along +Y direction the electric field of the wave at some instant is given as  $\vec{E} = 3\vec{x} + 5\vec{z}$ . Find phase constant of the wave at also vector magnetic field.

② State & explain Gauss's law

③ State & explain point form of Gauss's law

## Tutorial No :- 2

① find the vector  $\vec{OP}$  & unit vector  $\hat{OP}$  if  $O = (1, 5, 3)$ ,  $P = (-3, -4, 2)$ .

② Three points are given as follows  $P = (2, 1, 3)$ ,  $Q = (-1, 2, 1)$ ,  $R = (1, 0, 0)$  find :-

i) Vector from P to Q

ii) Unit vector from R to P

iii) Distance bet<sup>n</sup> P to R.

## Tutorial No :- 3

① Explain the surface & line & volume integral

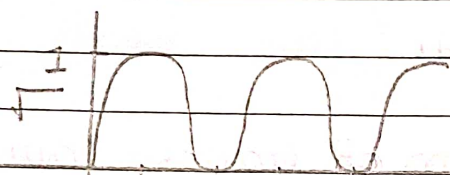
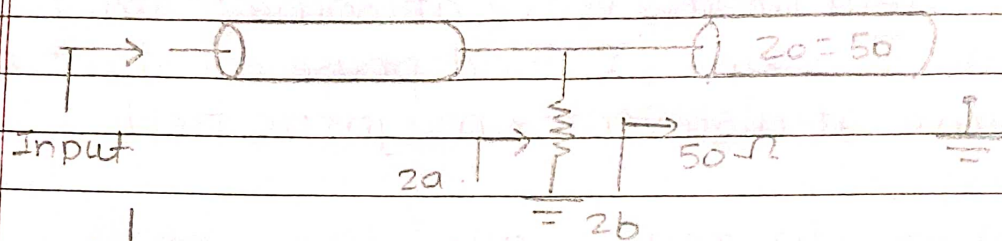
② Explain in detail gradient, divergence & curl operation.

③ What are the different types of co-ordinate system & explain?

## Tutorial No :- 4

① A microwave circuit consisting of lossless transmission line  $T_1$  &  $T_2$  is shown in the fig. the plot shows magnitude of input reflection coefficients has a function of frequency  $F$ .

The phase velocity of the signal in the transmission line is  $2 \times 10^8$  m/s find  $L$ .



- ② An air-line has characteristic impedance of  $70 \Omega$  & phase constant of  $3$  radians/m at  $100$  MHz. Calculate inductance/m & capacitance/m of line.
- ③ Derive eq<sup>n</sup> for power in transmission line.