

JANUARY 24

4

THURSDAY

HR. 01 DAY 334-352

MJC - Physics

Sem - I

Unit - II

| | M | T | W | T | F | S | S |
|----|----|----|----|----|----|----|----|
| J | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| A | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| N | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 24 | 29 | 30 | 31 | | | | |

Divergence of curl of a vector \rightarrow
 Since curl \vec{A} is a vector function, we may consider taking its divergence. ~~and~~

$$\therefore \text{div curl } \vec{A} = \nabla \cdot (\nabla \times \vec{A})$$

$$= \left(\vec{i} \frac{\partial}{\partial x} + \vec{j} \frac{\partial}{\partial y} + \vec{k} \frac{\partial}{\partial z} \right) \cdot \begin{vmatrix} \vec{i} & \vec{j} & \vec{k} \\ \frac{\partial}{\partial x} & \frac{\partial}{\partial y} & \frac{\partial}{\partial z} \\ A_x & A_y & A_z \end{vmatrix} = \begin{vmatrix} \frac{\partial}{\partial x} & \frac{\partial}{\partial y} & \frac{\partial}{\partial z} \\ \frac{\partial}{\partial x} & \frac{\partial}{\partial y} & \frac{\partial}{\partial z} \\ A_x & A_y & A_z \end{vmatrix} = 0$$

Since the two rows of the determinant are ~~inde~~ identical.

For any vector function \vec{A}

$$\nabla \cdot (\nabla \times \vec{A}) = \text{div. curl } \vec{A} = 0$$