UNITS AND DIMENSIONS SHEET 4

These questions of two statements each, printed as Assertion and Reason. While answering these Questions you are required to choose any one of the following four responses.

(1) If both Assertion & Reason are true & the Reason is a correct explanation of the Assertion.

(2) If both Assertion and Reason are true but Reason is not a correct explanation of the Assertion.

(3) If Assertion is true but the Reason is false.

(4) If Assertion & Reason both are false.

Q.1 **Assertion :** Light year and year, both measure time.
Reason : Light year is the time taken by the light to reach the earth from the sun.

Q.2 **Assertion :** All derived quantities may be represented dimensionally in terms of the base quantities.
Reason : The dimension of a base quantity in other base quantities is always zero.

Q.3 **Assertion :** If x and y are the distances along x and y axes respectively then the dimensions of $\dfrac{d^3 y}{dx^3}$ is $M^0 L^{-2} T^0$.

Reason : Dimensions of $\int_a^b y\,dx$ is $M^0 L^2 T^0$.

Q.4 **Assertion :** The equation $y = 2x + t$ cannot be true if x and y are distances and t is time.
Reason : Quantities with different dimensions cannot be added.

Q.5 **Assertion :** The unit vectors $\hat{i}$, $\hat{j}$ and $\hat{k}$ have units of distance and dimensions $[M^0 L^1 T^0]$
Reason : The product of a scalar and a vector is a new scalar.

Q.No.	1	2	3	4	5
Ans.	4	2	2	1	4