

Determinants - Class XII

Related Questions with Solutions

Questions

Question: 01

The value of the determinant $\begin{vmatrix} {}^5C_0 & {}^5C_3 & 14 \\ {}^5C_1 & {}^5C_4 & 1 \\ {}^5C_2 & {}^5C_5 & 1 \end{vmatrix}$ is

- A. 0
- B. $-(6!)$
- C. 80
- D. -576

Solutions

Solution: 01

$$\begin{aligned} & \begin{vmatrix} {}^5C_0 & {}^5C_3 & 14 \\ {}^5C_1 & {}^5C_4 & 1 \\ {}^5C_2 & {}^5C_5 & 1 \end{vmatrix} = \begin{vmatrix} 1 & 10 & 14 \\ 5 & 5 & 1 \\ 10 & 1 & 1 \end{vmatrix} \\ & = \begin{vmatrix} 16 & 16 & 16 \\ 5 & 5 & 1 \\ 10 & 1 & 1 \end{vmatrix} \\ & R_1 \rightarrow R_1 + R_2 + R_3 \\ & = 16 \begin{vmatrix} 1 & 1 & 1 \\ 5 & 5 & 1 \\ 10 & 1 & 1 \end{vmatrix} \\ & = 16 \begin{vmatrix} 0 & 0 & 1 \\ 0 & 4 & 1 \\ 9 & 0 & 1 \end{vmatrix} \quad C_1 \rightarrow C_1 - C_2, C_2 \rightarrow C_2 - C_3 \\ & = 16[0 - 36] = -16 \times 36 \end{aligned}$$

Correct Options

Answer:01

Correct Options: D