

Previous year questions

Q.1

Let $P = [a_{ij}]$ be a 3×3 matrix and let

$Q = [b_{ij}]$ where $b_{ij} = 2^{i+j} a_{ij}$ for $1 \leq i, j \leq 3$

the determinant of P is 2 then the determinant of

the matrix Q is

- (A) 2^{10} (B) 2^{11} (C) 2^{12} (D) 2^{13}

$$|Q| = \begin{vmatrix} 2^2 a_{11} & 2^3 a_{12} & 2^4 a_{13} \\ 2^3 a_{21} & 2^4 a_{22} & 2^5 a_{23} \\ 2^4 a_{31} & 2^5 a_{32} & 2^6 a_{33} \end{vmatrix}$$

$$|Q| = 2^2 \cdot 2^3 \cdot 2^4 \begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{vmatrix}$$

$$|Q| = 2^2 \cdot 2^3 \cdot 2^4 |P| \cdot 2^3$$

$$\Rightarrow 2^2 \cdot 2^3 \cdot 2^4 \cdot 2 \cdot 2^3 \Rightarrow 2^{13}$$