

IIT JAM 2024 Mathematics Answer Key (Unofficial)

Ques 1. Which of the following groups have elements of order 1,2,3,4,5 but does not have elements of order ≥ 6 ?

- a) S_5
- b) S_6
- c) A_5
- d) A_6

Ques 2. Group = S_{13}

A. \exists an element order 60.

B. ~~\exists~~ an element of order 35.

C. \exists an element order 42.

Ques 3. $A = \begin{bmatrix} \frac{1}{\sqrt{3}} \\ \frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{6}} \\ 0 \end{bmatrix}$. $I - 2AA^T$ is invertible or not.

Ques 4. $A = \begin{bmatrix} 0 & 1 & 2 & 3 \\ 1 & 0 & 1 & 2 \\ 2 & 1 & 0 & 1 \\ 3 & 2 & 2 & 0 \end{bmatrix}$ a_{14} in A^{-1} .

Ques 5

$\mathcal{P} = P_{12}(x)$
 $\mathcal{S} = \left\{ P(x) \in P_{12}(x) \mid P(x) = P(-x) \text{ \& } P(2024) = 0 \right\}$. find

the dimension of this set.

Ques 6. $\lim_{n \rightarrow \infty} \left(\frac{1}{n^3+1} + \frac{2^2}{n^3+2} + \frac{3^2}{n^3+3} + \dots + \frac{n^3}{n^3+n} \right)$ is equal to?

Ques 7. As x tends to infinity the solution of ode $y^1 + y^3 - y = 0$

Ques 8. If $0 \leq x \leq 1$, $0 \leq y \leq 1$, $\frac{1}{4} \leq xy \leq \frac{1}{2}$, find area

Ques 9. which two are isomorphic among U_8 , U_{10} , U_{12}

Ques 10 . $f(x) = \sin^{-1}x$, coeff. of x^6 in Taylor's series expansion of $(f(x))^2$?

