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) S5
b) S6
c) A5
d) A6
Ans. D

Ques 2. Group = S_{13}
A. $\exists$ an element order 60.

B. $\not\exists$ an element of order 35.
C. $\exists$ an element forder 42.
Ans. C

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

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 $y = P_{12}(x)$

$\xi = \left\{ P(x) \in P_{12}(x) \mid P(x) = P(-x) \And P(2024) = 0 \right\}$ **. find the dimension of this set.**
Ans. 6

Ques 6. lim n→inf (1/(n³+1) + 2²/(n³+2) + 3²/(n³+3) +........n³/(n³+n) is equal to?
Ans. 1/3 ln(2)

Ques 7. As x tends to infinity the solution of ode $y^1 + y^3 - y = 0$ **Ans. -1**
Ques 8. If 0<= x <= 1, 0<=y<= 1, ¼ <= xy <= ½, find area **Ans. ¼**
Ques 9. which two are isomorphic among U8 , U10 , U12 **Ans. U8 & U12**
Ques 10 . f(x) = Sin $^{-1}$x, coeff. of of 6 in Taylor's series expansion of (f(x)) 2 ? **Ans. 1/10**