1Q) Consider Two sets $A = \{x \in Z : |(|x-3|-3)| \leq 1\}$

$B = \left\{x \in R - \{1,2\} : \frac{(x-2)(x-4)}{x-1} \log_e(|x-2|) = 0\right.$

onto functions $f : A \longrightarrow B$

i) 32 ii) 79 iii) 62 iv) 81

2Q) $\sum_{K=1}^{n} a_K = \alpha n^2 + \beta n$. If $a_{10} = 59$, $a_6 = 7a_1$, then $\alpha + \beta$ is eavals to

$\cancel{\alpha+\beta}$

i) 12 ii) 5 iii) 7 iv) 3

3Q)

$I(x) = \int \frac{3dx}{(4x+6)(\sqrt{4x^2+8x+3})}$ and $I(0) = \frac{\sqrt{3}}{4} + 20$. If

$I\left(\frac{1}{2}\right) = \frac{a\sqrt{2}}{b} + c$, where $a, b, c \in \mathbb{N}$, $gcd(a,b) = 1$

$a+b+c$ is eaval to

i) 28 ii) 29 iii) 31 iv) 30

4) The sum of all the real solutions of the equation $\log_{(x+3)}(6x^2+28x+30) = 5-2\log_{(6x+10)}(x^2+6x+9)$ is equal to.

i) 2 ii) 4 iii) 1 iv) 0

5) The no. of ways, in which 16 oranges can be distributed to four children such that each child gets atleast one orange, is

i) 455 ii) 429 iii) 384 iv) 403

6) If the points of intersection of the ellipses $x^2+2y^2-6x-12y+23=0$ and $4x^2+2y^2-20x-12y+35=0$ lie on a circle of radius r and centre (a,b) then the value of $ab+18r^2$

i) 51 ii) 52 iii) 55 iv) 53

7) let $\vec{a}, \vec{b}, \vec{c}$ be three vectors such that $\vec{a}\times\vec{b} = 2(\vec{a}\times\vec{c})$. If $|\vec{a}|=1$, $|\vec{b}|=4$, $|\vec{c}|=2$, and the angle b/n $\vec{b}$ and $\vec{c}$ is 60°, then $|\vec{a}\cdot\vec{c}|$ is equal to

i) 1 ii) 2 iii) 4 iv) 0

8) Let PQ be a chord of the hyperbola $\frac{x^2}{4}-\frac{y^2}{b^2}=1$, perpendicular to the x-axis such that OPQ is an equilateral triangle, O being the centre of the hyperbola. If the eccentricity of the hyperbola is $\sqrt{3}$, then the area of the triangle OPQ is.

i) $\frac{11}{5}$ ii) $\frac{8\sqrt{3}}{5}$ iii) $\frac{9}{5}$ iv) $2\sqrt{3}$

9) $\vec{a}=\hat{i}-2\hat{j}+3\hat{k}$, $b=2\hat{i}+\hat{j}-\hat{k}$, $\vec{c}=\lambda\hat{i}+\hat{j}+\hat{k}$ and $\vec{v}=\vec{a}\times\vec{b}$. If $\vec{v}\cdot\vec{c}=11$ and the ~~leq~~ length of the projection of $\vec{b}$ on $\vec{c}$ is P, then $9P^2$ is equal to

i) 9 ii) 6. iii) 12 iv) 4

10) If $f(x)=\begin{cases}\dfrac{a|x|+x^2-2(\sin|x|)(\cos|x|)}{x}, & x\neq 0\\ b, & x=0\end{cases}$ is continuous

at $x=0$, then a+b is equal to

i) 0 ii) 1 iii) 4 iv) 2

11) $z=\frac{\sqrt{3}}{2}+\frac{i}{2}$, $i=\sqrt{-1}$, then $(z^{201}-i)^8$ is equal to

i) 0 ii) 1 iii) 256 iv) -1

12)

12) let $A(1,2)$ and $C(-3,-6)$ be two diagonally opposite vertices of a rhombus, whose sides AD and BC are parallel to the line $7x-y=14$. if $B(\alpha,\beta)$ and $D(\gamma,\delta)$ are the other Two vertices, then $|\alpha+\beta+\gamma+\delta|$ is equal to.

i) 6 ii) 1 iii) 9 iv) 3

13) The area of the region enclosed between the circle $x^2+y^2=4$ and $x^2+(y-2)^2=4$ is:-

i) $\frac{4}{3}(2\pi-3\sqrt{3})$ ii) $\frac{2}{3}(2\pi-3\sqrt{3})$ iii) $\frac{4}{3}(2\pi-\sqrt{3})$ iv) $\frac{2}{3}(4\pi-3\sqrt{3})$

14) An equilateral triangle OAB is inscribed in the parabola $y^2=4x$ with the vertex O at the vertex of the parabola. Then the minimum distance of the circle having AB as a diameter from the origin is.

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