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## D.A.V PUBLIC SCHOOL, KURUKSHETRA SUMMER VACATION ASSIGNMENT <br> CLASS XI <br> SUBJECT - MATHEMATICS

$Q$ :-1 Find the number of non zero integral solutions of the equation $|1-\mathrm{i}|^{\mathrm{x}}=2^{\mathrm{x}}$.

Q :-3 Express in a+ib form of

$$
\left[\left(\frac{1}{3}+i \frac{7}{3}\right)+\left(4+i \frac{1}{3}\right)-\left(-\frac{4}{3}+i\right)\right]
$$

Q :-4 Find the value of x which satisfy the equation.

$$
a^{2} x^{2}-2 a^{3} x+a^{4}+a^{4}+c^{2}=0
$$

Q:-5 Solve $-12 x>30$ when $x$ is an integer.
Q:-6 Find sum of odd integers from 1 to 2001.
Q:-7 Find the $20^{\text {th }}$ term of $\frac{5}{2}, \frac{5}{4}, \frac{5}{8}, \ldots \ldots$.
Q:-8 Evaluate : $\sum_{\mathrm{k}=1}^{11}\left(2+3^{\mathrm{k}}\right)$
Q:9 find sum to infinity in

$$
\frac{-3}{4}, \frac{3}{16}, \frac{-3}{64}, \ldots
$$

Q10. If $P(n)$ is the statement " $n^{3}+n$ is divisible by 3 ". Is $P(4)$ is true?
Q11. If $\alpha$ and $\beta$ are different complex Numbers with $|\beta|=1$ then find $\left[\frac{\beta-\alpha}{1-\alpha \beta}\right]$

$\left(a^{2}+b^{2}\right)\left(c^{2}+d^{2}\right)\left(e^{2}+f^{2}\right)\left(g^{2}+h^{2}\right)=A^{2}+B^{2}$

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Q13. Reduce $\left(\left(\frac{1}{1-4 \mathrm{i}}-\frac{2}{1+\mathrm{i}}\right)\left(\frac{3-4 \mathrm{i}}{5+\mathrm{i}}\right)\right.$ to the standard form.
Q 14.Solve $x^{2}+\left(\frac{a x}{x+a}\right)^{2}=3 a^{2}, x \neq-a$

Q 15. Solve $\frac{1}{p+q+x}=\frac{1}{p}+\frac{1}{q}+\frac{1}{x}$

Q 16. Solve the following system of inequations:

$$
\frac{x}{2 x+1} \geq \frac{1}{4}, \frac{6 x}{4 x-1}<\frac{1}{2}
$$

Q 17. Solve the following system of inequalities:

$$
\frac{4 x+3}{2 x-5}<6, x \neq \frac{5}{2}
$$

Q 18.Solve : $: \frac{|x|-1}{|x|-2} \geq 0, x \in R, x \neq \pm 2$
Q19. Find the solution set of the following system of linear inequationsgraphically:
$2 x+3 y-12 \geq 0$
$2 x-y+2 \geq 0$
$3 x-4 y+12 \geq 0$
$\mathrm{X} \leq 4, \mathrm{y} \geq 2$
Q 20. Using P.M.I, prove that for all $\mathrm{n} \in \mathrm{N}$.

$$
1+\frac{1}{1+2}+\frac{1}{1+2+3}+\cdots+\frac{1}{1+2+3+\cdots+n}=\frac{2 n}{n+1}
$$

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Q21. Using P.M.I prove that

$$
7^{2 n}+2^{3 n-3} * 3^{n-1}
$$

is divisible by 25 for all $\mathrm{n} \in \mathrm{N}$.
Q22. The ratio of the A.M and G.M between two positive number $a$ and $b$ is $m$ : $n$ show that $a: b=\left(m+\sqrt{m^{2}-n^{2}}\right):\left(m-\sqrt{m^{2}-n^{2}}\right)$

Q 23. If a,b,c are in A.P. b,c,d are in G.P. and $\frac{11}{\mathcal{c}^{\prime}, \bar{d} \mathrm{e}}$ are in A.P. prove that $\mathrm{a}, \mathrm{c}, \mathrm{e}$ are in G.P.

Q 24. Find the sum of the series up to $n$ terms.

$$
\frac{1^{3}}{1}+\frac{1^{3}+2^{3}}{1+3}+\frac{1^{3}+2^{3}+3^{3}}{1+3+5}+\cdots
$$

$Q 25$. Let $S$ be sum, $P$ be product and $R$ the sum of the reciprocals of $n$ terms in a G.P. prove that $\mathrm{P}^{2} \mathrm{R}^{\mathrm{n}}=\mathrm{S}^{\mathrm{n}}$

