# © 'doubtnut 

 India's Number 1 Education App
## MATHS

## BOOKS - VGS PUBLICATION-BRILLIANT

## MODEL PAPER 3

## Section A Very Short Answer Questions

1. If the $\operatorname{Arg} \bar{z}_{1}$ and $\operatorname{Arg} z_{2}$ are $\frac{\pi}{5}$ and $\frac{\pi}{3}$ respectively,find (Arg ( $\left.z_{1}+\operatorname{Arg} z_{2}\right)$

## (D) Watch Video Solution

2. Find the square root of $7+24 i$.
3. Find the value of $(1-i)^{8}$.

## - Watch Video Solution

4. For what values of $x$, the expression $x^{2}-5 x+6$ is positive ?

## - Watch Video Solution

5. If $1,1, \alpha$ are the roots of $x^{3}-6 x^{2}+9 x-4=0$ then find ' $\alpha$ '.

## - Watch Video Solution

6. Find the number of ways of arranging 5 boys and 4 girls in a row, so that the row begins with a boy ends with a girl.
7. Find the number of diagonals of a polygon with 12 sides.

## (D) Watch Video Solution

8. Find the middle term (s) in the expansion of $\left(\frac{3 x}{7}-2 y\right)^{10}$

## - Watch Video Solution

9. Find the mean deviation about the median for the data : 6, 7, 10,

12, 13, 4, 12, 16.

- Watch Video Solution

10. Let $X$ be a random variable such that
$P(X=-2)=P(X=-1)=P(X=2)=P(X=1)=1 / 6$ and $P(X=0)=1 / 3$, then find the mean of $x$.

## - Watch Video Solution

## Section B Short Answer Questions

1. Determine the locus of $z, z \neq 21 i$ such that $\operatorname{Re}\left(\frac{z-4}{z-2 i}\right)=0$

## D Watch Video Solution

2. Find the maximum value of the function
$\frac{x^{2}+14 x+9}{x^{2}+2 x+3}$ over R.
3. If the letters of the word EAMCET are permuted in all possible ways and if the words thus formed are arranged in the dictionary order, find the rank of the word EAMCET.

## - Watch Video Solution

4. Find the number of ways of selecting 11 member cricket team from 7 bats men, 6 bowlers and 2 wicket keepers so that the team contains 2 wicket keepers and atleast 4 bowlers.

## ( Watch Video Solution

5. Resolve $\frac{2 x^{2}+1}{x^{3}-1}$ into partial fractions.

## - Watch Video Solution

6. Two persons $A$ and $B$ are rolling die on the condition that the person who gets 3 will win the game. If A starts the game, then find the probabilities of $A$ and $B$ respectively to win the game.

## - Watch Video Solution

$$
\begin{aligned}
& \text { 7. If A,B, are two events with } \\
& P(A \cup B)=0.65 \text {, and } P(A \cap B)=0.15 \text {, then find the value of } \\
& P\left(A^{C}\right)+P\left(B^{C}\right) \text {. }
\end{aligned}
$$

## - Watch Video Solution

## Section C Long Answer Questions

1. Show that one value of
$\left(\frac{1+\sin . \frac{\pi}{8}+i \cos \cdot \frac{\pi}{8}}{1+\sin . \frac{\pi}{8}-i \cos \cdot \frac{\pi}{8}}\right)^{8 / 3}$ is -1.

## D Watch Video Solution

2. Solve the following equations
$x^{4}-10 x^{3}+26 x^{2}-10 x+1=0$

## D Watch Video Solution

## 3. Prove that following

$C_{0}+\frac{3}{2} \cdot C_{1}+\frac{9}{3} \cdot C_{2}+\frac{27}{4} \cdot C_{3}+\ldots \ldots+\frac{3^{n}}{n+1} \cdot C_{n}=\frac{4^{n+1}-1}{3(n+1)}$.

- Watch Video Solution

4. If $x=\frac{1}{5}+\frac{1.3}{5.10}+\frac{1.3 .5}{5 \cdot 10.15}+\ldots \infty$ then find $3 x^{2}+6 x$.

## D Watch Video Solution

5. Find the mean deviation from the mean of the following data:

| Marks | $0-10$ | $10-20$ | $20-30$ | $30-40$ | $40-50$ | $50-60$ | $60-70$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| No. of Students | 6 | 5 | 8 | 15 | 7 | 6 | 3 |

Using step deviation method.

## - Watch Video Solution

6. Three boxes $B_{1}, B_{2}$ and $B_{3}$ contain balls with different colours as shown below:

|  | White | Black | Red |
| :---: | :---: | :---: | :---: |
| $B_{1}$ | 2 | 1 | 2 |
| $B_{2}$ | 3 | 2 | 4 |
| $B_{3}$ | 4 | 3 | 2 |

A die is thrown. $B_{1}$ is chosen if either 1 or 2 turns up. $B_{2}$ is chosen
if either 3 or 4 turns up. $B_{3}$ is chosen if either 5 or 6 turns up. Having chosen a box in this way, a ball is chosen at random from this box. If the ball drawn is found to be red, find the probability that it is drawn from box $B_{2}$.

## - Watch Video Solution

7. Two dice are rolled and the probability distribution of the sum of the numbers on the dice is formed. Find mean of the sum.

## - Watch Video Solution

