



MATHS

BOOKS - VGS PUBLICATION-BRILLIANT

MODEL PAPER 6

Section A Very Short Answer Type Questions

1. Write the complex number (2 + 3i) (3 + 4i) in the form A + iB.

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2. If
$$z_1=\ -1, z_2=i$$
 then find Arg $\left(rac{z_1}{z_2}
ight)$

3. If $1, \, \omega, \, \omega^2$ are the cube roots of unity prove that

$$(a+b)ig(a\omega+b\omega^2ig)ig(a\omega^2+b\omegaig)=a^3+b^3$$

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4. If the equation $x^2 - 15 - m(2x - 8) = 0$ has equal roots, find the

value of 'm'.

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5. If the product of the roots of

 $4x^3+16x^2-9x-a=0$ is 9 , then find a .

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6. Find the number of different chains that can be prepared using 7 different coloured beads.







8. Prove that : Find the set E of the value of x for which the binomial expansions for the following are valid

$$(3-4x)^{3\,/\,4}$$

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9. Find the mean deviation about the median for the following data

4,6,9,3,10,13,2

10. The probability that a person chosen at random is left handed (in hand writing) is 0.1 what is the probability that in a group of ten people there is one and only one who is left handed.



1. If a point p dentes a complex number z=x+iy in the argand plane and if $\frac{z+1}{z+i}$ is a purely real number , then the locus of p is

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2. Prove that
$$rac{1}{3x+1}+rac{1}{x+1}-rac{1}{(3x+1)(x+1)}$$
 does not lie

between 1 and 4, if x is real.

3. If the letters of the word PRISON are permuted in all possible ways and the words thus formed are arranged in dictionary order, find the rank of the word. PRISON

4. Simplify
$${}^{34}C_5 + \sum\limits_{r=0}^4 {}^{(38-r)}C_4.$$

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5. Resolve
$$rac{x^2-3}{(x+2)(x^2+1)}$$
 into partial fractions.

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6. State and prove addition theorem on probability.

7. Suppose A and B are independent events with P(A)=0.6 P(B)=0.7.

Compute

 $P(A \cap B)$

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8. Suppose A and B are independent events with P (A) = 0.6 & P (B) = 0.7

Compute

 $P(A \cup B)$

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9. Suppose A and B are independent events with P (A) = 0.6 P (B) = 0.7.

Compute

P(B/A)

10. Suppose A and B are independent events with P (A)= 0.6 P (B) = 0.7.

Compute

 $P(A^c \cap B^c)$

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Section C Long Answer Type Questions

1. If n is an integer then show that

 $(1+\cos heta+i\sin heta)^n+(1+\cos heta-i\sin heta)^n=2^{n+1}\cos^n(heta/2)\mathrm{cos}igg(rac{n heta}{2}igg)$

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2. The roots of $2x^5 + x^4 - 12x^3 - 12x^2 + x + 2 = 0$ are

3. If the coefficients of 4 consecutive terms in the expansion of $\left(1+x
ight)^n$

are a_1, a_2, a_3, a_4 respectively, then show that

$$rac{a_1}{a_1+a_2}+rac{a_3}{a_3+a_4}=rac{2a_2}{a_2+a_3}$$

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4. If
$$x = \frac{1.3}{3.6} + \frac{1.3.5}{3.6.9} + \frac{1.3.5.7}{3.6.9.12} + \dots$$
 then prove that $9x^2 + 24x = 11.$

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5. The mean deviation about the mean for the data is

Marks obtained	0-10	10-20	20-30	30-40	40-50
Number of students	5	8	15	16	6

6. Three Urns have the following composition of balls.

Urn I: 1 white, 2 black

Urn II : 2 white, 1 black

III : 2 white, 2 black

One of the Urn is selected at random and a ball is drawn. It turns out to

be white. Find the probability that it come from Urn III.



7. The probability distribution of a random variable Xis given below:

X = x _i	1	2	.3	4	5
$P(X = x_i)$	k	2k .	3k j	'4k	5k

Find the value of k and the mean and variance of X.

