MATHS

BOOKS - VK GLOBAL PUBLICATION MATHS (HINGLISH)

MID TERM TEST PAPER

Section A

1. In ΔABC and ΔDEF, it is given that $\frac{AB}{DE} = \frac{BC}{FD}$ then

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2. Find the value of $(\sin 45^\circ + \cos 45^\circ)$

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3. A bag contains 3 red balls, 5 white balls and 7 black balls. What is the probability that a ball drawn from the bag at random will be neither red nor black?

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4. What is the solution of the pair of equation y = 0 and y = - 3?

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5. Which measure of central tendency is given by the x - coordinate of the point of intersection of the more than ogive and less than ogive?

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6. Give an example of polynomials $f(x)$, $g(x)$, $q(x)$ and $r(x)$ satisfying $f(x) = g(x)\dot{q}(x) + r(x)$, where degree $r(x) = 0$.

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Section B

1. P and Q are the points on the sides DE and DF of a triangle DEF such that DP = 5 cm, DE = 15 cm, DQ = 6 cm and QF = 18 cm. Is PQ||EF? Give reasons for your answer

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2. If $\sin^2 A = 2$ sin A then find the value of A.

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3. Find the relation between a and b if $x = 2, y = 3$ is a solution of a pair of equations $2x - 3y + a = 0$ and $2x + 3y - b + 2 = 0$.

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4. Write a quadratic polynomial, sum of whose zeros is $2\sqrt{3}$ and their product is 2.

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5. From a well shuffled pack of cards, a card is drawn at random. Find the probability of getting a black queen.

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Section C

1. Prove that $\sqrt{2}$ is an irrational number.

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2. Use Euclid's division lemma to show that the square of any positive integer is either of the form $3m$or $3m+1$for some integer m.[Hint: Let x be any positive integer then it is of the form $3q$, $3q+1$or $3q+2$Now square each of these and sho

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3. Solve the following system of linear equations. :

$(a-b)x+(a+b)y=a^2-2ab-b^2$,

$(a+b)(x+y)=a^2+b^2.$

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4. Represent the following system of linear equations graphically. From the graph, find the points where the lines intersect y-axis.

$3x + y - 6 = 0$

$2x - y - 5 = 0$

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5. Prove that

$(\sin\theta + \text{cosec}\theta)^2 + (\cos\theta + \sec\theta)^2 = (7 + \tan^2\theta + \cot^2\theta).$

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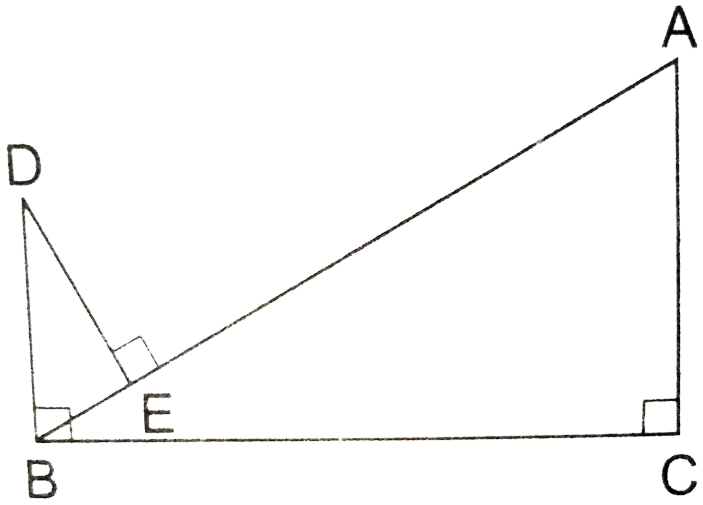
6. In the given figure, $DB \perp BC, DE \perp AB$ and $AC \perp BC$.

Prove that $\frac{BE}{DE} = \frac{AC}{BC}$



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7. By applying division algorithm prove that the polynomial $g(x) = x^2 + 3x + 1$ is a factor of the polynomial $f(x) = 3x^4 + 5x^3 - 7x^2 + 2x + 2.$

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8. An aircraft has 120 passsenger seats. The number of seats occupied during 100 flights is given in the following table.

Number of seats	100-104	104-108	108-112	112-116	116-120
Frequency	15	20	32	18	15

Determine tha mean number of seats occupied over the flights.

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9. Two numbers are in the ratio 5 : 6. If 8 is subtracted from each of the numbers, the ratio becomes 4 : 5, then find the numbers.

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10. Using Euclid's division algorithm, find the HCF of $56, 88$ and 404.

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Section D

1. Find k so that $x^2 - 3x + k$ is a factor of polynomial $x^3 - 6x^2 + 11x - 6$. Also find all the zeroes of the two polynomial.

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2. A survey regarding the heights (in cm) of 50 girls of class X of a school was conducted and the following data was obtained.

Height in cm	120–130	130–140	140–150	150–160	160–170	Total
Number of girls	2	8	12	20	8	50

Find the mean, median and mode.

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3. The ratio of the the areas of two similar triangles is equal to the ratio of the squares of their corresponding sides/altitudes.

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4. Prove that $\frac{\cot A - \cos A}{\cot A + \cos A} = \frac{\cos ecA - 1}{\cos ecA + 1}$

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5. It takes 12 hours to fill a swimming pool using two pipes . If the pipes of larger diameter is used for 4 hours and the pipe of smaller diameter is used for 9 hours , only half of the pool is filled. How long would it take for each pipe to fill the pool separately?

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6. If $\cos ec\theta + \cot\theta = p,$ then prove that $\cos\theta = \frac{p^2 - 1}{p^2 + 1}$

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7. The annual rainfall record of a city for 66 days is given in the following table.

Rainfall in cm	0–10	10–20	20–30	30–40	40–50	50–60
Number of days	22	10	8	15	5	6

Calculate the median rainfall using ogives (of more than type and of less than type).

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