



MATHS

BOOKS - JEEVITH PUBLICATIONS MATHS (KANNADA ENGLISH)

ANNUAL EXAMINATION QUESTION PAPER- 5

Section A

1. Define power set of a Set.



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2. If $G=\{7,8\}$ and $H=\{5,4,2\}$, find $G \times H$ and $H \times G$.

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3. Convert 240° into radian measure.

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4. Express $(2 - i) - (6 + 3i)$ in $(a + ib)$ form ?

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5. Find n if ${}^n C_9 = {}^n C_5$.

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6. Find 17^{th} term of sequence whose n^{th} term is given by

$$a_n = 4n - 3?$$

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7. Define slope of a straight line ?

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8. Evaluate $\lim_{x \rightarrow 0} \frac{(x + 1)^2 - 1}{x}$?

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9. Write the negation of statement $\sqrt{2}$ is not a complex number.

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10. Three coins are tossed once. Find the probability of getting atleast two heads

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Section B

1. If $A = \{1, 2, 3, 4, 5, 6\}$, $B = \{2, 4, 6, 8\}$, then find $A - B$ and $B - A$.

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2. If A and B are two sets such that $A \cup B$ has 50 elements, A has 28 elements and B has 32 elements, how many elements does $A \cap B$ have?

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3. A function f is defined by $f(x) = (2x - 5)$ write the value of (i) $f(7)$ (ii) $f(-3)$?

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4. Find the angle in radians through which a pendulum swings if its length is 75 cm and the tip describes an arc of

length 10 cm

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5. Find the solution of $\sin x = \left(-\frac{\sqrt{3}}{2} \right)$?

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6. Write the multiplicative inverse of $(4 - 3i)$?

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7. Solve the inequality and represent the solution graphically on the number line ?





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8. Find the equation of the line passing through the point $(-4,3)$ with slope $1/2$.



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9. Find the distance between parallel lines $(15x + 8y - 34 = 0)$, $(15x + 8y + 31 = 0)$?



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10. Find the equation of set of the points P such that its distance from the points $A(3, 4, -5)$ and $B(-2, 1, 4)$

are equal ?

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11. Evaluate $\lim_{x \rightarrow 0} \left(\frac{1 - \cos x}{x} \right)$?

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12. Write converse and contrapositive of " something is cold implies that it has low temperature "?

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13. The coefficient of variation for a distribution is 60 and standard deviation is 21. Find the arithmetic mean.

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14. A card is selected from a pack of 52 cards. Find the probability that the card drawn is

(i) an ace

(ii) black card

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1. In a group of 65 people , 40 like cricket , 10 like both cricket and tennis . How many like tennis only and not cricket ? How many like tennis?

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2. Let $A = \{ 1,2,3,\dots,14 \}$ Define a relation R from A to A by $R = \{ x,y \} : 3x - y = 0 \text{ where } x,y \text{ in } A \}$ ` Write down is domain and range

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3. Prove that: $\cos 3x = 4 \cos^3 x - 3 \cos x$

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4. Convert the complex number $-1 - i$ into polar form ?

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5. If $x + iy = \frac{a + ib}{a - ib}$, prove that $x^2 + y^2 = 1$

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6. How many words, with or without meaning can be made from the letters of the word MONDAY, assuming that no letter is repeated, if.

(i) 4 letters are used at a time,

(ii) all letters are used at a time

(iii) all letters are used but first letter is a vowel ?

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7. Insert five numbers between 8 and 26 such that the resulting sequence is in AP.

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8. Find the sum of the sequence 8, 88, 888, 8888, . . . To n terms.

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9. Find the coordinate of focus , directrix and latus rectum of parabola $y^2 = 8x$?

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10. Find the derivative of $\sin x$ with respect to x from 1st principal ?

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11. Verify by the method of contradiction that $\sqrt{7}$ is irrational number

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12. A and B are events such that $P(A) = 0.42, P(B) = 0.48$ and $P(A \text{ and } B) = 0.16$ Determine (i) $P(\text{not } A)$,(ii) $P(\text{not } B)$,(iii) $P(A \text{ or } B)$

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13. A committee of two persons is selected from two men and two women. What is the probability that the committee will have (i) no man ? (ii) one man ? (iii) two man ?

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Section D

1. Draw the graph of the signum function write its domain and range.

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2. Prove that :
$$\frac{\sin 5x - 2 \sin 3x + \sin x}{\cos 5x - \cos x} = \tan x$$

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3.

$$1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6} \quad \forall n \in \mathbb{N}.$$

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4. Solve graphically

$$x + 2y \leq 10, x + y \geq 1, x - y \leq 0, y \leq 0$$

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5. A group consists of 4 girls and 7 boys .In how many ways can a team of 5 members be selected , if the team has (i) no girls (ii) atleast one boy and one girl ?

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6. State and prove Binomial theorem for any positive integer n.

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7. Derive the equation for straight line in normal form. Hence find the equation of line $p=2$ and $\omega = 60^\circ$.

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8. Derive an expression for the co-ordinates of points that divides the line joining points $A(x_1, y_1, z_1)$ and $B(x_2, y_2, z_2)$ internally in the ratio $m:n$. Hence find the co-ordinates of midpoint of AB where $A=(3,2,1)$ and $B=(7,6,5)$.

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9. Prove that $\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$, where x measured in radians , Also evaluate $\lim_{x \rightarrow 0} \frac{\sin 4x}{x}$?

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10. Find mean deviation about mean for the data ?

x_1	2	5	6	8	10	12
f_1	2	8	10	7	8	5

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1. (a) Derive geometrically that
 $\cos(x + y) = \cos x \cos y - \sin x \sin y$. Hence deduce the
value of $\cos 75^\circ$

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2. Find the sum to n terms of the series
 $1 \times 2 + 2 \times 3 + 3 \times 4 + \dots$? $1 \times 2 + 2 \times 3 + 3 \times 4 + \dots$
?

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3. Define hyperbola as a set of points derive its equation in
the form $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$

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4. Differentiate $\frac{x^5 - \cos x}{\sin x}$

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