



MATHS

BOOKS - JEEVITH PUBLICATIONS MATHS (KANNADA ENGLISH)

ANNUAL EXAMINATION QUESTION PAPER -7

Section A

1. If $n(A) = 3$, then find $n[P(A)]$?



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2. If $(x - 2, y + 3) = (5, -6)$, then find the values of x and y ?



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3. Convert 750° into radians ?

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4. Find the conjugate of $i(2 + i)$?

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5. If ${}^n C_5 = {}^n C_{10}$, then find n ?

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6. Find the 5^{th} term of the G.P $1, \left(\frac{1}{5}\right), \left(\frac{1}{25}\right), \dots?$

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7. Find the slope of the line $3x - 4y + 1 = 0$.



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8. Evaluate $\lim_{x \rightarrow 0} \frac{x^3 - 64}{x - 4}$?



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9. Write the negation of the statement "Every natural number is greater than zero"?



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10. Define "sample space" ?



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1. If $U = \{x : x \leq 6 \text{ and } x \in N\}$, $A = \{3, 5\}$, $B = \{2, 5, 6\}$ then $(A \cup B)$?

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2. If X and Y are two sets such that $n(X \cap Y) = 10$, $n(X) = 38$, $n(Y) = 25$ then find $X \cup Y$?

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3. Find the domain and range of the following real functions:

(i) $f(x) = -|x|$, (ii) $f(x) = \sqrt{9 - x^2}$

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4. If in two circles arcs of the same length subtend angles 60° and 75° at the centre, find the ratio of their radii.

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5. Find the value of $\sin 75^\circ$.

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6. Express the following in $a+ib$ form

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

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7. Solve the inequality $3(1 - x) < 2(x + 4)$ and represent it on number line ?

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8. Find the acute angle between :-

$$5x + 6y - 1 = 0, \quad x - 11y + 8 = 0$$

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9. Find the distance between the parallel lines

$$3x - 4y + 7 = 0 \text{ and } 3x - 4y + 5 = 0?$$

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10. Find the ratio in which the y-z plane divides the line segment formed by joining points (-2,4,7) and (3,-5,8)

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

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12. Write the contrapositive and converse of the statement. If two lines are parallel, then they do not intersect in the same plane.

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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 letter is chosen at random from the word "ASSASSINATION" . Find the probability that letter is vowel.

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1. In a class of 35 students, 24 like to play cricket and 16 to play football. Also each student like to play atleast one of the two games. How many students like to play both cricket and football ?

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2. Let $f = \{(1, 1), (2, 3)(0, - 1), (- 1 - 3)\}$ be a linear function from Z into Z . Find $f(x)$?

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3. Find the general solution of the euation $\cos 4x = \cos 2x$?

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4. Solve the equation $\sqrt{2}x^2 + x + \sqrt{2} = 0$?

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5. Express the complex number $(-1 + i\sqrt{3})$ in polar form ?

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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. Find the middle terms in the expansion of $\left(3 - \frac{x^3}{6}\right)^9$?

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

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9. The sum of first three terms of a G.P is $\frac{39}{10}$ and their product is 1. Find the common ratio and the terms.

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10. Find the equation of the circle with radius 5 whose centre lies on x-axis and passes through the point (2,3).

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

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

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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 men ?

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14. If E and F are two events such that $P(E) = \frac{1}{4}$, $P(F) = \frac{1}{2}$ and $P(E \text{ and } F) = \frac{1}{8}$. Find $P(\text{not } E \text{ and not } F)$

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1. Define a signum function. Write range, also draw the graph of the function.

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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.

$1.2 + 2.3 + 3.4 + \dots + n(n + 1) = \frac{n}{3}(n + 1)(n + 2) \forall n \in N.$

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4. Solve graphically the system of linear inequalities

$4x + 3y \leq 60, y \geq 2x, x \geq 3, x, y \geq 0.$

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5. In how many ways, 4 cards can be chosen from a pack of 52 cards? In how many of these (i) 4 cards are of same suit (ii) two are red cards and twice are black cards. (iii) 4 cards belong to 4 different suits.

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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 the formula to find the co-ordinates of a point which divide the line joining the points $A(x_1, y_1, z_1)$ and $B(x_2, y_2, z_2)$ internally in the ratio $m : n$.

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9. Prove that $\lim_{x \rightarrow 0} \left(\frac{\sin x}{x} = 1 \right)$?

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10. Find the mean deviation about mean for the following data ?

Height in cm	95-105	105-115	115-125	125-135	135-145	145-155
Number of boys	9	13	26	30	12	10

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1. 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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2. Find the derivative of $\frac{x^2 - \cos x}{\sin x}$ with respect to x ?

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3. prove that $\cos(A + B) = \cos A \cos B - \sin A \sin B$

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4. Find the sum to n terms of the series $5 + 11 + 19 + 29 + 41 + \dots$

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