



MATHS

BOOKS - JEEVITH PUBLICATIONS MATHS (KANNADA ENGLISH)

ANNUAL EXAMINATION QUESTION
PAPER - 2017 (SOUTH) (WITH ANSWERS)

Part A I Answer All The Questions

- 1. Given that the number of subsets of a set. A is
- 16. Find th number of elements in A.



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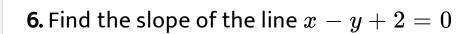
- **2.** If (x 1, y + 3) = (2, x + 4) Find the values of x and y.
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3. Convert $\left(\frac{7\pi}{6}\right)^e$ into degrees.

4. Find the multiplicative inverse of $\sqrt{5}+3i$



5. Find 20th term of G.P. $\frac{5}{2}, \frac{5}{4}, \frac{5}{8} - - - - -$



7. Write the negation of the statement " $\sqrt{7}$ is rational".



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8. Evaluate : $\lim_{x \to 0} \left\lceil \frac{(x+1)^5 - 1}{x} \right\rceil$.



9. A letter is chosen at random from the word "ASSASSINATION" . Find the probability that letter is yowel.



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Part B li Answer Any Ten Questions

1. If X and Y are two sets such that X \cup Y has 18 elements, X has 8 elements and Y has 15 elements how many elements does X \cap Y have

2. If A={-1,1}, find $A \times A \times A$.



3. Let $f(x) = \sqrt{x}$ and g(x) = x find (i) (f + g) x

(ii) (fg) x



4. The minute hand of a clock is 2.1cm long. How

far does its tip move is 20 minute.

$$\left(\operatorname{use}\pi = \frac{22}{7} \right)$$



5. Find the general solutions of $2\cos^2 x - 3\sin x = 0$



6. Evaluate : lim



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

3, 9, 5, 3, 12, 10, 18, 4, 7, 19, 21.



8. Write the inverse, converse of 'If a parallelogram is a square, then it is a rhombus.



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9. On her vacations Veena visits cities A,B C and D in random order . What is the probability that she visits A before B?



10. In a triangle ABC with vertices A(2,3), B(4,-1) and C(1,2) . Find the length of the altitude from the vertex A.



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11. Find the distance between

3x + 4y + 5 = 0 and 6x + 8y + 2 = 0



13. Show that the points P(-2, 3, 5), Q (1, 2, 3) and R(7, 0, -1) are collinear.



14. Express $1+\sqrt{3i}$ in polar form.



1. In a survey of 600 students in a school, 150 students were found to be taking tea and 225 taking coffee, 100 were taking both tea and coffee. Find how many students were taking neither tea nor coffee?



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



3.
$$\tan 4x = \frac{4\tan x (1 - \tan^2 x)}{1 - 6\tan^2 x + \tan^4 x}$$



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4. If $x+iy=\sqrt{rac{a+ib}{c+id}}$ Prove that $x^2+y^2=\sqrt{rac{a^2+b^2}{c^2+d^2}}$



5. Convert the complex number $-\frac{16}{1+i\sqrt{3}}$ into polar form.

6. Find
$$(a+b)^4-(a-b)^4$$
.Hence evaluate $\left(\sqrt{3}+\sqrt{2}\right)^4-\left(\sqrt{3}-\sqrt{2}\right)^4$.



(ii) all letters are used at a time

7. 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 leters are used at a time,

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



?

8. Find the foci and eccentricity of ellipse $rac{x^2}{16} + rac{y^2}{9} = 1$

9. How many terms of AP - 6 -11/2, -5... are needed to give the sum - 25 ?



10. In an A.P if m^{th} term is n and n^{th} term is m, where $m \neq n, \,$ find the p^{th} term .



11. Differentiate of $\sin x$ w.r.t. x from first principles



12. Verify by the method of contradiction that $\sqrt{2}$ is irrational .



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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 men (ii) two men



$$P(E) = \frac{1}{4}, P(F) = \frac{1}{2} \text{ and } P(E \text{ and } F) = \frac{1}{8}$$



. Find P(not E and not F)

Part D Iv Answer Any Six Questions

1. Prove that
$$\lim_{x \to 0} \left(\frac{\sin x}{x} \right) = 1$$
 (x being in radians) and hence Show that $\lim_{x \to 0} \left(\frac{\tan x}{x} \right) = 1$.



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$$1^2+2^2+3^2+..... + n^2 = rac{n(n+1)(2n+1)}{6}$$

3. Define modulus function, draw the graph of it,



write its domain and range.



4. A group consists of 7 boys and 5 girls . Find the number of ways in which a team of 5 members can be selected so as to have atleast one boy and girl.



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5. State and prove Bionomial theorem for any positive integer n.



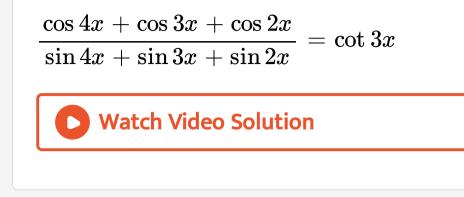
6. Derive the formula to find the co-ordinates of a point which divide the line joining the points $A(x_1,y_1,z_1)$ and $B(x_2,y_2,z_2)$ internally in the ratio m:n.



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7. If p is the length of perpendicular from origin to the line whose intercepts on the axes are 'a' and 'b' then prove that $\frac{1}{p^2}=\frac{1}{a^2}+\frac{1}{b^2}$.





Solve

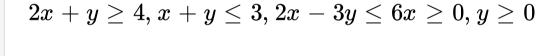
Prove

that:

graphically

8.

9.





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

Marks	0-10	10-20	20-30	30 - 40	40-50	50-60
No. of girls	6	8	14	16	4	2



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Part E Answer Any One Question

1. (a)Derive geometrically that $\cos(x+y) = \cos x \cos y - \sin x \sin y$. Hence

deduce the value of $\cos 75^{\circ}$



2. Find the sum to n terms series

$$1^2 + (1^2 + 2^2)(1^2 + 2^2 + 3^2) + \dots$$



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3. Derive the equation of the ellipse in the form

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1.$$



4. (b) Find the derivative of $\frac{x^5-\cos x}{\sin x}$ with respect to x.

