



## MATHS

### BOOKS - JEEVITH PUBLICATIONS MATHS (KANNADA ENGLISH)

### ANNUAL EXAMINATION QUESTION PAPER - 2018 (SOUTH) (WITH ANSWERS)

Part A | Answer All The Questions

1. Define power set of a Set.



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2. If  $(x+1, y-2) = (3, 1)$  Find the values of  $x$  and  $y$ .



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3. Convert  $240^\circ$  into radian measure.



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4. Find the multiplicative inverse of  $2-3i$ .



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5. Compute  $\frac{12!}{10!2!}$



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6. If the  $n$ th term of the sequence is  $a_n = 4n - 3$   
then find 17th term



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7. Find the slope of the line passing through the  
points (3,-2) and (-1,4)



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8. Evaluate  $\lim_{x \rightarrow 0} \frac{ax + b}{cx + 1}$



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



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10. Describe the sample space for the indicated experiments

A coin is tossed and a die is thrown





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## Part B li Answer Any Ten Questions

1. If  $A=\{3,5,7,9,11\}, B=\{7,9,11,13\}, C=\{11,13,15\}$  and  $D = \{15, 17\}$ , find

$$A \cap (B \cup C)$$



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2. If  $S$  and  $T$  are two sets such that  $S$  has 21 elements,  $T$  has 32 elements and  $S \cap T$  has 11 elements, how many elements does  $S \cup T$  have ?



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3. Let  $A = \{1, 2\}$ ,  $B = \{3, 4\}$ . Write  $A \times B$ . How many subsets will  $A \times B$  have ?



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



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5. Find the general solution of  $2 \sin x + \sqrt{3} = 0$



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6. Express  $\frac{(3 + i\sqrt{5})(3 - i\sqrt{5})}{(\sqrt{3} + i\sqrt{2}) - (\sqrt{3} - i\sqrt{2})}$  in the form  $a + ib$ .

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7. Solve  $7x + 3 < 5x + 9$ . Show the graph of the solution on number line.

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8. Find the equation of the straight line with slope  $m$  and passing through the point  $(x_1, y_1)$



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9. Reduce the equation  $3x + 2y - 12 = 0$  into intercept form and find its intercepts on the axes.



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10. Show that the points  $(2, 3, 4)$ ,  $(-1, -2, 1)$ ,  $(5, 8, 7)$  are collinear.







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11. Evaluate :  $\lim_{x \rightarrow 1} \frac{x^{15} - 1}{x^{10} - 1}$



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12. Write the converse and contrapositive of " if a number is divisible by 9 then its is divisible by 3"



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13. An analysis of monthly wages paid to workers in two firms A and B belonging to the same industry

gives the following results.

	Firm A	Firm B
No. of wage earners	586	648
Mean of monthly wages	<i>Rs.</i> 5253	<i>Rs.</i> 5253
Variance of distribution of wages	100	121

(i) Which firm A or B pays larger amount as monthly wages ?

(ii) Which firm A or B shows greater variability in individual wages .

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**14.** 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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## Part C iii Answer Any Ten Questions

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 ?



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2. Let  $A = \{1, 2, 3, 4, 6\}$ . Let  $R$  be the relation on  $A$  defined by  $\{(a, b) : a, b \in A, b \text{ is exactly divisible by } a\}$ .

(i) Write  $R$  in roster form, (ii) Find the domain of  $R$ ,

(iii) Find the range of  $R$ .



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



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4. Represent the complex number  $z = 1 + i$  in polar form.



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5. Solve  $\sqrt{5}x^2 + x + \sqrt{5} = 0$



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6. Find the number of arrangements of the letters of the word INDEPENDENCE. In how many of these

arrangements (i) do the word start with P (ii) do all the vowels always occur together.



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7. Find the middle term in the expansion of

$$\left(\frac{x}{3} + 9y\right)^{10}$$



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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. Find the sum of the sequence 8, 88, 888, 8888, . . .

To n terms.



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## Part D Answer Any One Question

1. Prove geometrically that  $\cos(x + y) = \cos x \cos y -$

$\sin x \sin y$  and hence prove  $\cos\left(\frac{\pi}{2} + x\right) = -\sin x$ .



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2. Find the sum to 'n' terms of  $1.2.3 + 2.3.4 + 3.4.5 + \dots$



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3. Find the derivative of  $f(x) = \frac{x + \cos x}{\tan x}$  w. r. to  $x$  ..

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