MATHS

BOOKS - JEEVITH PUBLICATIONS MATHS (KANNADA ENGLISH)

I PUC ANNUAL EXAMINATION QUESTION PAPER -2019 (SOUTH)-10

Part A

1. Write the set $(x : x \in R \& -4 < x \leq 6)$ as an interval.

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2. Let A={1,2} and B={3,4}. Find the number of relations from A to B.

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3. Convert $\frac{7\pi}{6}$ radians in degree measure ?

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4. Find the conjugate of $\sqrt{3i} - 1$

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

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6. Write the first three terms of the sequence $a_n = (-1)^{n-1} 5^{n+1}$

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7. Find the slope of the line $\frac{x}{3}+\frac{y}{2}=1$

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8. Evaluate $\lim_{x \to 0}(\operatorname{cosec} x-\cot x)$.

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9. Write the negation of "For every real number x,x is less than x +1 . "

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10. If $\frac{2}{11}$ is the probability of an event.What is the probability the event 'not A '

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Part B

1. If $U = \{x : x \leq 10, \mathrm{x} \in N\} A = \{x : \mathrm{x} \in N, x \text{ is prime}\} B = \{x : \mathrm{x} \in N, x$ is

write $A \cap B$ in roster form.

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2. If X and Y are two sets such that n (X) =17,n (Y) =23, and n $(X \cup Y) = 38$ find n$(X \cap Y)$

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3. The cartesian product $A \times A$ has 9 elements among which are found $(-1, 0, \&, 0, 1)$. Find the set A and the remaining elements of $A \times A$.

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4. A wheel makes 360 revolutions in one minute. Through how many radians does it turn in one second?

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5. If sin $A = \frac{3}{5}$ and A is in I quadrant then find sin2 A .

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6. Express $i^{18} + \left(\frac{1}{i}\right)^{25}$ in a+ib form.

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7. Solve graphically $y + 8 \geq 2x$

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8. Find the equation of the straight lne intersecting y axis at a distance of 2 units above the origin and making an angle 30° with the positive direction of x axis.

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9. Find the angle between the lines $\sqrt{3}x + y = 1$ and $x + \sqrt{3}y = 1$

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

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11. Evaluate $\lim_{x \to 3} \frac{x - 3}{x^2 - 5x + 6}$?

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12. Write the converse and contrapositive of the statement " If x is a prime number then x is odd "

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13. Coefficient of variation of distribution are 70 and the standard deviation is 16. What is the arithmetic mean of the distribution

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Part C

1. Given P(A) $= \frac{3}{5}$ and $P(B) = \frac{1}{5}$. Find P(A or B), if A & B are mutually exclusive events.

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

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

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5. Express $\frac{1+3i}{1-2i}$ in the form $a+ib$.

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6. Solve the equation $x^2 + \frac{x}{\sqrt{2}} + 1 = 0$

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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,

(ii) all letters are used at a time

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

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8. Find the term independent of x in the expansion of $\left(\frac{3}{2}x^2 - \frac{1}{3x}\right)$.

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9. The sum of first three terms of a $G.P.is$ (13)/(12) ` and their product is -1 Find the common ratio and the terms

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10. Insert 3 arithmetic means between 8 & 24 .

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11. Find the equation of te circle with radius 5 hobe centre lies on x- acis and passes through the point (2,3) .

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12. Differentiate of $\cos x$ w.r.t. x from first principles

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

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14. One card is drawn from well -shufled deck of 52 cards . If each out come is equally likely ,calculate the probability that the card will be (i) diamond (ii) not an ace (iii) a balck card ?

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15. A fair coin with 1 marked on one face and 6 on the other and a fair die are both tossed Find the probability that the sum of numbers that turn up is (i) 3 (ii) 12

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Part D

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

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2. Prove that: $\frac{\cos 4x + \cos 3x + \cos 2x}{\sin 4x + \sin 3x + \sin 2x} = \cot 3x$

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

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4. Solve the following system of inequations in 2 variables graphically:

$x + 2y \geq 20, 3x + y \leq 15$

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5. A group consists of 4 girls and 7 boys. In how ways can a team of 5 members be selected, if he team has.

At least one boy and one girl?

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6. State and prove Binomial theorem for a positive integer index.

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7. Find the coordinates of the foot of the perpendicular from the point (-1,3) to the line 3x-4y-16=0.

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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 $\lim_{\theta \to 0} \frac{\sin \theta}{\theta} = 1$, (θ being in radians) and hence show that $\lim_{\theta \to 0} \frac{\tan \theta}{\theta} = 1$?

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

Marks obtained	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80
Number of students	2	3	8	14	8	3	2

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Part E

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

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

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3. Derive the equation of the ellipse in the form $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$.

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4. Find the sum to n terms of the series $3 \times 8 + 6 \times 11 + 9 \times 14 + \ldots\ldots$

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