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## MATHS

## BOOKS - JEEVITH PUBLICATIONS MATHS <br> (KANNADA ENGLISH)

## ANNUAL EXAMINATION QUESTION PAPER-2

## Section A

1. Write the following sets is roster form:
$A=\{x: x$ is an integer and $-3<x<7\}$

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

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

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4. Write the multiplicative inverse of $2-3 i$ ?

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5. Evaluate $\frac{n!}{(n-r)!}$, when $\mathrm{n}=6$ and $\mathrm{r}=2$ ?

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6. If $a_{n}=\frac{2 n-3}{6}$, then find $a_{10}$ ?

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7. Find the slope of the line $3 x-4 y-2=0$ ?
(D) Watch Video Solution
8. Evaluate $\lim _{x \rightarrow 1}\left[\frac{x^{2}+1}{x+100}\right]$ ?

## D Watch Video Solution

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

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10. A coin is tossed three times. Find the number of elemnts in 'Sample space '?

# 1. Let $U=\{1,2,3,4,5,6\}, a=\{2,3\}, B=\{3,4,5\}$ 

, find $(A \cup B)$ ?

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2. If $X$ and $Y$ are two such that
$n(X)=17, n(Y)=23$ and $n(X \cap Y)=5, \quad$ find $n(X \cup Y)$.

## 3. If $f(x)=2 x-5$, find the value of $f(0)$ and $f(7)$ ?

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4. If $\cos x=\frac{-3}{5}$, x lies in $3^{\text {rd }}$ qudrant, Find the value of $\tan x$ ?

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

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6. Express the complex number $(1-i)-(-1+6 i)$ in $a+i b$ form

## D Watch Video Solution

7. Solve $5 x-3>=3 x-5$ ? Show the graph of the solution on number line?

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8. Find the equation of a line passing through the points ( $-1,1$ ) and ( $2,-4$ )?
9. Find the distance between the following parallel lines
$3 x+4 y+2=0 \quad\left(a x+b y+c_{1}=0\right)$
$3 x+4 y-7=0 \quad\left(a x+b y+c_{2}=0\right)$

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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 $\operatorname{Lim}_{x \rightarrow 3} \frac{x^{4}-81}{2 x^{2}-5 x-3}$

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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. The coefficient of variation for a distribution is 60 and standard deviation is 21 . Find the arithmetic mean.
14. One card is drawn from a well shuffled deck of 52
cards. If each outcome is equally likely, calculate the probability that the card will be (a) a diamond (b) not a diamond (c) a black card.

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## Section C

1. In a survey of 400 students in a school, 100 were
listed as taking apple juice, 150 as taking orange juice and 75 were listed as taking both apple as well as
orange juice. Find how many students were taking neither apple juice nor orange juice.

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2. Let $f(x)=x^{2}, g(x)=2 x+1$ be two functions.

Then find
(i) $(\mathrm{f}+\mathrm{g})(\mathrm{x})$ (ii) $(\mathrm{f}-\mathrm{g})(\mathrm{x})$ (iii) (fg) (x)

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3. Find the general solution of $\cot x=-\sqrt{3}$ ?
4. Solve: $2 x^{2}+x+1=0$

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

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6. Find the number of arrangement of the letters of
the word "INDEPENDENCE" In how many of these arrangements ?
(i) do the words start with P?
(ii) do the words begin with I and end in P ?
7. Find the coefficient of $x^{6} y^{3}$ in the expansion of $(x+2 y)^{9}$

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8. Insert 6 numbers between 3 and 24 so that the resulting sequence is an A.P.
9. In a G. P the $3^{\text {rd }}$ term is 24 and the $6^{\text {th }}$ term is 192 . Find the $10^{\text {th }}$ term ?

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10. Find the centre and radius of the circle $x^{2}+y^{2}-4 x-8 y-45=0 ?$

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11. Find $\lim _{x \rightarrow 0} f(x)$ and $\lim _{x \rightarrow 1} f(x)$, where
$f(x)= \begin{cases}2 x+3, & x \leq 0 \\ 3(x+1), & x>0\end{cases}$
12. Verify by the method of contradiction that $\sqrt{7}$ is irrational number

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13. Two dice are thrown and the sum of number which
come up on the dice is noted. Let us consider the event associated with the experiment $A$ : the sum is even :B: the sum is miltiple of 3 . Check whether $A$ and
$B$ are mutually exclusive events or not ?
14. Two students Anil and Ashima appeared in an examination. The probability that Anil will quanlify
the examination is 0.05 and that Ashima will qualify the examination is 0.10 . The probability hat both will qualify the examination is 0.02 . Find the Probabiity that both Anil and Ashima will not qualify the examination?

## Section D

1. Define modulus function, draw the graph of it, write its domain and range.

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2. Prove that: $\frac{\cos 4 x+\cos 3 x+\cos 2 x}{\sin 4 x+\sin 3 x+\sin 2 x}=\cot 3 x$
A.
B.
C.
D.
3.
$1^{2}+2^{2}+3^{2}+\ldots \ldots \ldots+n^{2}=\frac{n(n+1)(2 n+1)}{6}$

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4. Solve the following system of inequalities graphically $x+2 y \leq 8,2 x+y \leq 8, x \geq 0, y \geq 0$.
5. A group consists of 4 girls and 7 boys .In how many ways can a team of 5 members be selected, if the term has (i) no girls (ii) atleast one boy and one girl ?

## D Watch Video Solution

6. Prove that the Binomial theorem

$$
(a+b)^{n}={ }^{n} C_{0} a^{n}+{ }^{n} C_{1} a^{n-1} b+{ }^{n} C_{2} a^{n-2} b^{2}+\ldots{ }^{n} C_{n} b^{n}
$$

for any positive integer ' $n$ '.

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7. Obtain the equation of a plane in the intercept form.

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8. Prove that $\operatorname{Lim}_{x \rightarrow 0} \frac{\sin x}{x}=1$ ( $x$ being measured in radians )

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9. Find the mean deviation about the mean for the folllowing data?

## Section E

1. 

(a)Derive
geometrically
that
$\cos (x+y)=\cos x \cos y-\sin x \sin y$.Hence deduce the valueof $\cos 75^{\circ}$

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2. Find the sum to $n$ terms of the series whose $n^{\text {th }}$ terms is $\mathrm{n}(n+3)$.
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 derivative of $\frac{x-\cos x}{\tan x}$ with respect to x ?
