



## MATHS

# **BOOKS - JBD PUBLICATION**

# **MODEL PAPER (6)**



1. The setA={x:x is a prime number and divisor of 6} is

equal to:



**2.** Let A be a set containing 10 distinct elements. Then the total number of distinct functions from A to A is:

A. 10

 $B.\,10^{10}$ 

 $\mathsf{C.}\,2^{10}$ 

 $D.\,10^2 - 1$ 

#### Answer:



**3.** The value of  $\sin^2 75^\circ \, - \, \sin^2 15^\circ\,$  is equal to:

A. 
$$\frac{\sqrt{3}}{2}$$

B. 0

$$\mathsf{C}.\,\frac{1}{2}$$

D. 1

#### **Answer:**



**4.** If 
$$lpha,eta$$
 are the roots of the equation  $x^2\!-\!2x+2=0$ , then the value of  $lpha^2+eta^2$  is

A. -1

B. 1

C. 0

D.  $\pm 1$ 

#### **Answer:**



## 5. The value of ${}^{n}P_{r}$ , and ${}^{n}C_{r}$ will be equal when

A. n=2r

B. r=0 or 1

C. n=r

D. n=3r

#### Answer:



## 6. Three numbers a,b and c are in A.P if:

A. 2a-b-c=0

B. a-b-c=0

C. 2b-a-c=0

D. none of these



**8.** The foci of the ellipse  $9x^2 + 4y^2 = 36$  are

A. 
$$(\pm 5, 0)$$

B. (0, -5)

$$\mathsf{C.}~(-5,0)$$

D.  $(0, \pm 5)$ 

#### Answer:



9. 
$$\lim_{x o 2} \left(x^3 - x^2 + 1 
ight)$$
 is equal to:

A. -11

B. 12

C. -12

D. none of these



#### **Answer:**







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**13.** Find the multiplicative inverse of 7-2i.

14. Find the middle terms in the expansion of  $\left(\frac{x}{3} + ay\right)^{10}$ 

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15. Find the term independent of x in the expansion

of 
$$\left(x^2+rac{1}{x}
ight)^9$$

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**16.** Find the co-ordinates of the centroid of the triangle whose vertices are

$$(x_1, y_1, z_1), (x_2, y_1, z_2)$$
 and  $(x_3, y_3, z_3)$ .  
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17. Find out which of the following sentences are statements and which are not. Justify your answer.Asia is a continent.



**18.** Find out which of the following sentences are statements and which are not. Justify your answer.

 $\sqrt{2}$  is a rational number.



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**20.** Write the converse of the following statements.

If you do all the exercises in the book, you get A

grade in the class.

**21.** Find the (a) union (b) intersection of the following pair of sets :

A = {x:.x is a natural number and multiple of 3}, B =

{x:.x is a natural number less than 6}.









 $10^{2n-1} + 1$  is divisible by 11.



25. If 
$$.^{n+1} C_{r+1} : {}^n C_r : {}^{n-1} C_{r-1} = 11:6:3$$
, find the

values of n and r.



**26.** In how many ways can the letters of the word PERMUTATIONS be arranged if the words start with P and end with S?

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**27.** In how many ways can the letters of the word PERMUTATIONS be arranged if the vowels are all together?

28. Insert five numbers between 8 and 26 such that

the resulting sequence is an A.P.



29. If A and G be A.M. and G.M., respectively between

two positive numbers, prove that the numbers are

$$A\pm \sqrt{(A+G)(A-G)}.$$

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**30.** Find the equations of the lines passing through

the point (2, 2) such that the sum of their intercepts



**31.** Find the coordinates of the foci and the vertices, the ecentricity and the length of the latus rectum of the hyperbolas :

 $16x^2 - 9y^2 = 576$ 

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**32.** Prove that:  $\lim_{x o 2} rac{|x-2|}{x-2}$  does not exist.



find the values of a and b.



**37.** Solve the following systems of linear inequalities graphically

 $3x+4y\leq 60, x+3y\leq 30, x\geq 0, y\geq 0.$ 

38. Solve the system of inequalities:

$$2(2x+3)-10 < 6(x-2), \left(rac{x-2}{2}
ight)+13 \geq 2+rac{4x}{3}$$



40. Find the derivative of

· · · · · ·

 $x^{\,-3}(5+3x)$ 



41. Find the derivative of

 $x^5ig(3-6x^{\,-\,9}ig).$ 

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## 42. Find the mean and variance of the first n natural

numbers.



## **43.** Find the mean of the following data :

Class-interval	Frequency	
0 - 50		4
50 - 100	10-	10
100 - 150		12
150 - 200		10
200 - 250		8
250 - 300		6
Total		50