

**KENDRIYA VIDYALAYA SANGATHAN
CHANDIGARH REGION
SAMPLE PAPER 2018-19
CLASS XI
SUBJECT MATHEMATICS**

Time Allowed : 3 Hours

Max. Marks : 100

General instructions.

1. All the questions are compulsory.
2. The question paper consists of 29 questions divided into 4 sections A, B, C and D.
3. Section A comprises of 4 questions of 1 mark each. Section B comprises of 8 questions of 2 marks each. Section C comprises of 12 questions of 4 marks each. Section D comprises of 7 questions of 6 marks each.
4. There is no overall choice. However internal choice has been provided.

SECTION – A		
1.	Let $A = \{x, y, z\}$ and $B = \{1,2\}$. Find the number of relations from A to B.	1
2.	Find the sum to infinity of the following progression: 6, 1.2, 0.24,	1
OR		
Find : $1+2+3+4+\dots\dots\dots+(n+1)$		
3.	Find the slope of the line, which makes an angle of 30° with the positive direction of y- axis measured anticlockwise.	1
4.	Determine whether “OR” used in the following statement is inclusive or exclusive.: “Two lines intersect at a point or are parallel.”	1
SECTION – B		
5.	Find the domain and range of $f(x) = \sqrt{4 - x^2}$	2
6.	Find the value of $\tan \frac{13\pi}{12}$	2
7.	If $\frac{1}{8!} + \frac{1}{9!} = \frac{x}{10!}$, Find x .	2
8.	Find the equation of the hyperbola where foci are $(0, \pm 12)$ and the length of the latus rectum is 36.	2
9.	Find the coordinates of the points which trisect the line segment joining the points P(4,2,-6) and Q(10, -16, 6)	2
OR		

	Find the coordinates of a point on y-axis which are at a distance of $5\sqrt{2}$ From the point P(3, -2, 5)	
10.	Find the derivative of $\frac{\sin x + \cos x}{\sin x - \cos x}$ OR Evaluate $\lim_{x \rightarrow -2} \left(\frac{\frac{1}{x} + 1}{x+2} \right)$	2
11.	Write the contrapositive and converse of the following statement: “x is an even number implies that x is divisible by 4	2
12.	A coin is tossed. If the outcome is a head, a die is thrown. If the die shows up an even number, the die is thrown again. What is the sample space for the experiment? OR Out of 100 students, two sections of 40 and 60 are formed. If you and your friend are among the 100 students, what is the probability that You both enter the same section?	2
SECTION - C		
13.	Let A and B be sets. If $A \cap X = B \cap X = \emptyset$ and $A \cup X = B \cup X$ for some set X, show that $A = B$.	4
14.	Let R be a relation from N to N defined by $R = \{(a, b) : a, b \in N \text{ and } a = b^2\}$ Are the following true ? (i) $(a, a) \in R$ for all $a \in N$ (ii) $(a, b) \in R$ implies $(b, a) \in R$ (iii) $(a, b) \in R, (b, c) \in R$ implies $(a, c) \in R$	4
15.	Prove that: $(\cos x + \cos y)^2 + (\sin x - \sin y)^2 = 4\cos^2 \frac{x+y}{2}$	4
16.	Prove the following by using Principal of Mathematical Induction $n(n+1)(n+5)$ is a multiple of 3 for all $n \in N$	4
17.	Convert the complex number $\frac{-16}{1+i\sqrt{3}}$ into polar form. OR Find the square root of $-7 - 24i$	4

18.	If $x - iy = \sqrt{\frac{a-ib}{c-id}}$ prove that $(x^2 + y^2)^2 = \frac{a^2 + b^2}{c^2 + d^2}$	4
19.	Find the probability that when a hand of 7 cards is drawn from a well shuffled deck of 52 cards, it contains (i) 3 kings (ii) At least 3 kings	4
20.	If p is the length of perpendicular from the origin to the line whose intercepts on the axes are a and b , then show that $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$ OR Find the equation of the line which is equidistant from the parallel lines $9x + 6y - 7 = 0$ and $3x + 2y + 6 = 0$	4
21.	Find the equation of the circle passing through the points (2,3) and (-1, 1) and whose centre is on the line $x - 3y - 11 = 0$	4
22.	Find the derivative of $\frac{x}{2x+1}$ with respect to x from first principle OR Evaluate: $\lim_{x \rightarrow 0} \frac{e^{5x} - e^{2x}}{x}$	4
23.	A committee of two persons is selected from two men and two women. What is the probability that the committee will have (a) no man (b) One man (c). two men ?	4
SECTION – D		
24.	In a survey of 100 persons it was found that 28 read magazine A, 30 read magazine B, 42 magazine C, 9 read magazines A and B, 11 read magazines A and C, 6 readmagazines B and C and 4 read all the three magazines. Find (i) How many read none of the three magazine ? (ii) How many read magazine C only.?	6

