MATHEMATICS TALENT SEARCH OLYMPIAD(MTSO) 2015 - 2016						
IN CLA	TSO STAGE - 1 TIME SS : IX Max. Marks	: 60 r : 50	nin.			
Instr	<b>ructions:</b> Fill the OMR sheet completely and carefully. Each question carries one mark and has only one correct answer. No negative mark The question paper contains 50 questions to be answered in 60 minutes.	zs.				
1.	Euclid belongs to which country1) India2) Greece3) Egypt4) Babylonia	[	]			
2.	Which of the following needs a proof1) an axiom2) a definition3) a postulate4) a Theorem	[	]			
3.	The measure of an angle which is $32^{\circ}$ less than its supplement is1) $74^{\circ}$ 2) $80^{\circ}$ 3) $148^{\circ}$ 4) $106^{\circ}$	[	]			
4.	In the adjoining figure $\overline{AOB}$ is a stright line then $\angle AOC$ and $\angle BOD$	[	]			
	1) 40,80 2) 45, 70 3) 50,60 4) 55,65 $x^{\circ} 65^{\circ} 2x-20$ A O B					
5.	In the given figure $AB \parallel CD$ , then the value of x ? 1) 40° 2) 50° 3) 60° 4) 75°	[	]			
6.	The angles of a triangle are in the ratio $2:3:7$ . Then the Measure of least angle is 1) $30^{\circ}$ 2) $60^{\circ}$ 3) $15^{\circ}$ 4) $45^{\circ}$	[	]			
7.	In $\triangle ABC \ \angle A + \angle B = 65^{\circ} \text{ and } \angle B + \angle C = 140^{\circ} \text{ then } \angle B = 1)40^{\circ}$ $2)25^{\circ}$ $3)115^{\circ}$ $4)100^{\circ}$	[	]			
8.	In a square the angle between diagonals is 1) $70^{\circ}$ 2) $80^{\circ}$ 3) $90^{\circ}$ 4) $65^{\circ}$	[	]			
9.	In a triangle the centroid divides the median in the ratio from vertex 1) $1:2$ 2) $2:1$ 3) $3:2$ 4) $2:3$	[	]			
10.	Which of the following are always similar1) two circles2) two squares3) two equilateral triangles4) all the above	[	]			
11.	The zero of the polynomial ax + b is	[	]			
	1) $\frac{b}{a}$ 2) $\frac{-b}{a}$ 3) 0 4) -1					

The factor of the polyn	omial $f(x) = aox^n + a_1 x^n$	$^{-1}$ + + $a_n$ when $a_0$ +	$a_2 + a_4 + \dots$		
$= a_1 + a_3 + a_5 - \dots = 1) x - 1$	2) x +1	3) x + 2	4) x – 2	[	]
If the roots of the equat 1) $4p^5-25qp^3-125rp^2+6$ 3) $4p^5+25qp^3+125rp^2+6$	tion x <sup>5</sup> +px <sup>4</sup> +qx <sup>3</sup> +rx <sup>2</sup> +sx 525sp–3125t= 0 525sp–3125t= 0	+t = 0, be in A.P then 2) $4p^5-25qp^3+125rp^2-$ 4) $4p^5+25qp^3-125rp^2-$	625sp + 3125t 625sp -3125t=	[ = 0 = 0	]
For what value of K if the 1) 1	the polynomial $f(x) = 2x^4$ 2) 2	$x^{4}+3x^{3}+2kx^{2}+3x+6$ is e 3) -1	xactly divisible 4) –2	by (x [	(+ 2) ]
The factors of $a^2 + b - a^2$ 1) $a - 1$ , $a + b$	b–a are 2) a + 1, a – b	3) a –1, a – b	4) a +1 , a+b	[	]
If $\alpha, \beta, \gamma$ are the roots (1) 3 – par	of $x^3+px^2+qx+r = 0$ then 2) $3p - rq$	$\frac{1}{2}\sum \alpha^2 \beta$	4) 3pg – r	[	]
The value of $(369)^2 - (1)$	(368) <sup>2</sup> (2) 81	3) 37	4) 737	[	]
The G.C.D of two poly 1) x +1	nomials $(x^3 - 2x^2 - x + 2)$ , 2) x - 1	$(x^{3}-3x^{2}-x+3)$ is 3) $x^{2}-1$	4) x <sup>2</sup> +1	[	]
If $f(x)$ is a polynomial roots of $f(x) = 0$ then le	of degree n, with ration ast value of 'n' is	hal coefficients and $1 + i$	$, 3 - \sqrt{2}$ , and $(3 - \sqrt{2})$	7 are 1 [	three ]
If $x+y+z = 1$ ; $x^2+y^2+z^2$ 1) 4	= 2; $x^3+y^3+z^3=3$ then x	$x^5 + y^5 + z^5 = $	4) 6	[	]
The point at which the (1) the abscissa	co- ordinate axes Meet i 2) the ordinate	is called . 3) the origin	4) the quadrar	[ nt	]
If $x > 0$ and $y < 0$ then (1) quadrant $-1$	the point (x, – y) lies in 2) quadrant - II	3) quadrant – III	4) quadrant –	[ IV	]
Which of the following 1) (1,7)	points does not lies on 2) (2,10)	the line $y = 3x + 4$ 3) (-1,1)	4) (4,12)	[	]
The perpendicular dista 1) 3 units	nce of the point P(4,3) = 2) 4 units	from the y - axis is 3) 5 units	4) 7 units	[	]
Each side of an equilate	eral triangle measures $80$	cm the area of triangle is $\sqrt{2}$	5	[	]
1) $8\sqrt{3}cm^2$	2) $16\sqrt{3}cm^2$	3) $32\sqrt{3}cm^2$	4) $48 \text{cm}^2$	Г	1
$1) \frac{1998}{67}$	<ul><li>2) 1998</li></ul>	F x E	. Find X	L	J
3) $\frac{1998}{57}$	4) 1968	B C			
The mirror image of the 1) (x,y)	e point (-x,-y) in x - axi 2) (-x,y)	s 3) (x,-y)	4) (-x,-y)	[	]
	The factor of the polyn = $a_1 + a_3 + a_5 - \cdots = 1$ ) x - 1 If the roots of the equat 1) $4p^5 - 25qp^3 - 125rp^2 + 6$ 3) $4p^5 + 25qp^3 + 125rp^2 + 6$ For what value of K if th 1) 1 The factors of $a^2 + b - a$ 1) $a - 1$ , $a + b$ If $\alpha, \beta, \gamma$ are the roots of 1) $3 - pqr$ The value of $(369)^2 - (1)$ 1) $1^2$ The G.C.D of two polynomial roots of $f(x) = 0$ then le 1) $6$ If $x + y + z = 1$ ; $x^2 + y^2 + z^2$ 1) $4$ The point at which the of 1) quadrant - 1 Which of the following 1) $(1,7)$ The perpendicular distation 1) $3 - pqr$ ABC is divided into for 1) $\frac{1998}{57}$ The mirror image of the 1) $(x,y)$	The factor of the polynomial $f(x) = ax^n + a_1x^n$ = $a_1 + a_3 + a_5 - \cdots = a_1$ 1) $x - 1$ 2) $x + 1$ If the roots of the equation $x^5 + px^4 + qx^3 + rx^2 + sx$ 1) $4p^5 - 25qp^3 - 125rp^2 + 625sp - 3125t = 0$ For what value of K if the polynomial $f(x) = 2x^2$ 1) $1$ 2) $2$ The factors of $a^2 + b$ -ab-a are 1) $a - 1$ , $a + b$ 2) $a + 1$ , $a - b$ If $\alpha, \beta, \gamma$ are the roots of $x^3 + px^2 + qx + r = 0$ then 1) $3 - pqr$ 2) $3p - rq$ The value of $(369)^2 - (368)^2$ 1) $1^2$ 2) $81$ The G.C.D of two polynomials $(x^3 - 2x^2 - x + 2)$ , 1) $x + 1$ 2) $x - 1$ If $f(x)$ is a polynomial of degree n, with ration roots of $f(x) = 0$ then least value of 'n' is 1) $6$ 2) $4$ If $x + y + z = 1$ ; $x^2 + y^2 + z^2 = 2$ ; $x^3 + y^3 + z^3 = 3$ then $x^3$ 1) $4$ 2) $5$ The point at which the co- ordinate axes Meet 1 1) the abscissa 2) the ordinate If $x > 0$ and $y < 0$ then the point $(x, -y)$ lies in 1) quadrant - 1 2) quadrant - II Which of the following points does not lies on 1) $(1,7)$ 2) $(2,10)$ The perpendicular distance of the point P(4,3) = 1 1) $8\sqrt{3}cm^2$ 2) $16\sqrt{3}cm^2$ $\Delta ABC$ is divided into four regions with areas $x^3$ 1) $\frac{1998}{67}$ 2) 1998 3) $\frac{1998}{57}$ 4) 1968 The mirror image of the point $(-x, -y)$ in $x - axia$ 1) $(x,y)$ 2) $(-x,y)$	The factor of the polynomial $f(x) = ax^{a} + a_{1}x^{a-1} + \dots + a_{a}$ when $a_{0} + a_{1}x^{a} + a_{3} + a_{5} - \dots = 1$ 1) $x - 1$ 2) $x + 1$ 3) $x + 2$ If the roots of the equation $x^{5} + px^{4} + qx^{3} + rx^{2} + sx + t = 0$ , be in A.P then 1) $4p^{5} - 25qp^{3} - 125rp^{3} + 625sp - 3125te 0$ 2) $4p^{5} - 25qp^{3} + 125rp^{2} - 25p^{3} + 125rp^{3} + 625sp - 3125te 0$ 4) $4p^{5} + 25qp^{3} - 125rp^{2} - 25p^{3} + 125rp^{3} + 625sp - 3125te 0$ 4) $4p^{5} + 25qp^{3} - 125rp^{2} - 25p^{3} + 125rp^{3} + 625sp - 3125te 0$ 4) $4p^{5} + 25qp^{3} - 125rp^{2} - 25p^{3} + 125rp^{3} + 625sp - 3125te 0$ 3) $a - 1$ , $a + b$ 2) $a + 1$ , $a - b$ 3) $a - 1$ , $a - b$ If eactors of $a^{2} + b - ab - a$ are 1) $a - 1$ , $a + b$ 2) $a + 1$ , $a - b$ 3) $a - 1$ , $a - b$ If $\alpha, \beta, \gamma$ are the roots of $x^{3} + px^{2} + qx + r = 0$ then $\sum \alpha^{2}\beta$ 1) $3 - pqr$ 2) $3p - rq$ 3) $3r - pq$ The value of $(369)^{2} - (368)^{2}$ 1) $1^{2}$ 2) $81$ 3) $37$ The G.C.D of two polynomials $(x^{3} - 2x^{2} - x + 2)$ , $(x^{3} - 3x^{2} - x + 3)$ is 1) $x + 1$ 2) $x - 1$ 3) $x^{2} - 1$ If $f(x)$ is a polynomial of degree n, with rational coefficients and $1 + i$ roots of $f(x) = 0$ then least value of 'n 'is 1) $6$ 2) $4$ 3) $3$ The point at which the co- ordinate axes Meet is called. 1) the abscissa 2) the ordinate 3) the origin If $x > 0$ and $y < 0$ then the point $(x, -y)$ lies in 1) quadrant - 1 2) quadrant - III Which of the following points does not lies on the line $y = 3x + 4$ 1) $(1,7)$ 2) $(2,10)$ 3) $(-1,1)$ The perpendicular distance of the point P(4,3) from the $y$ - axis is 1) $3 wits$ 2) $4 wits$ 3) $5 wits$ Each side of an equilateral triangle measures 8cm the area of triangle is 1) $8\sqrt{3}cm^{2}$ 2) $16\sqrt{3}cm^{2}$ 3) $32\sqrt{3}cm^{2}$ AABC is divided into four regions with areas as shown in the diagram 1) $\frac{1998}{57}$ 4) 1968 The mirror image of the point $(-x, -y)$ in $x - axis$ 1) $(x,y)$ 2) $(-x,y)$ 3) $(x, -y)$	The factor of the polynomial $f(x) = ax^n + a_1x^{n-1} + \dots + a_n$ when $a_0 + a_2 + a_4 + \dots = a_1 + a_1 + a_2 \dots = a_1 + a_1 + a_2 \dots = a_1 + a_1 + a_2 \dots = a_n + a_1 + a_2 +$	The factor of the polynomial $f(x) = aox^n + a_1x^{n-1} + \dots + a_n$ when $a_n + a_2 + a_4 + \dots = [$ 1) $x - 1$ (2) $x + 1$ (3) $x + 2$ (4) $x - 2$ If the roots of the equation $x^3 + px^3 + qx^3 + rx^2 + sx + t = 0$ , be in A.P then [ 1) $4p^5 - 25qp^{1} - 125rp^3 + 625sp - 3125te 0$ (2) $4p^5 - 25qp^3 + 125rp^2 - 625sp + 3125te 0$ 3) $4p^5 + 25qp^2 + 125rp^2 + 625sp - 3125te 0$ (4) $4p^2 + 25qp^2 - 125rp^2 - 625sp - 3125te 0$ For what value of K if the polynomial $f(x) = 2x^4 + 3x^3 + 2kx^2 + 3x + 6$ is exactly divisible by $(x + 1) = 1$ (2) (2) (3) $a - 1$ (4) $-2$ [ The factors of $a^2 + b - ab - a$ are [ 1) $a - 1$ , $a + b$ (2) $a + 1$ , $a - b$ (3) $a - 1$ , $a - b$ (4) $a + 1$ , $a + b$ If $\alpha, \beta, \gamma$ are the roots of $x^3 + px^2 + qx + r = 0$ then $\sum \alpha^2 \beta$ [ 1) $3 - pqr$ (2) $3p - rq$ (3) $3r - pq$ (4) $3pq - r$ The value of $(369)^2 - (368)^2$ [ 1) $1^2$ (2) $81$ (3) $37$ (4) $737$ The G.C.D of two polynomials $(x^3 - 2x^2 - x + 2)$ , $(x^3 - 3x^2 - x + 3)$ is [ 1) $x + 1$ (2) $x - 1$ (3) $x^2 - 1$ (4) $x^2 + 1$ If f (x) is a polynomial of degree n, with rational coefficients and $1 + i$ , $3 - \sqrt{2}$ , and 7 are t roots of $f(x) = 0$ then least value of $n^2$ is [ 1) $4 - 2$ (5) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4

	28.	The line $y = Mx + c$ cuts the x - axis at				[	]
		1) $\left(\frac{C}{M}, 0\right)$	2) (O,C)	$3)\left(\frac{-C}{M},0\right)$	$4)\left(0,\frac{C}{M}\right)$		
	29.	The sides of a triangle	are in the ratio 5 : 12 : 1	13 and its perimeter is 13	50m. Then the a	area of	the
		triangle is 1) 700M <sup>2</sup>	2) 750M <sup>2</sup>	3) 650M <sup>2</sup>	4) 800M <sup>2</sup>	l	]
	30.	The base of an issosceles triangle is 80cm and its area is 360CM <sup>2</sup> then the perimeter of the					ngle
		1s 1) 160CM	2) 162CM	3) 170CM	4) 150CM	l	]
	31.	The equation ax +by + 1) 1	c = 0 has how many sol 2) 2	lutions 3) Infinite	4) 4	[	]
	32.	The point of the form (	(a,a) where $a \neq 0$ lies of	n		[	]
		1) xm - axis	2) y - axis	3) the line $y = x$	4) the line $x +$	y = 0	
	33.	A linear equation in tw	o variables x and y is of $(0, 1, 0)$	f the form $ax + by + c = 0$	) where.	[	]
	<b>.</b>	1) $a \neq 0, b \neq 0$	2) $a \neq 0, b = 0$	3) $a = 0, b \neq 0$	4) $a = 0$ , $c = 0$		-
	34.	How many linear equation 1) only one	tions in x and y can be s 2) only two	satisfied by $x = 2$ , $y = 3$ 3) infinitely many	4) none	l	]
	35.	The area of the triangle 1) 12 sq units	e formed by the line x + 2) 18 sq.units	3y = 12 and the co-ordin 3) 24 sq.units	nate axes is 4) 30 sq units	[	]
	36.	System of equations a <sub>1</sub>	$x + b_1 y + c_1 = 0$ , $a_2 x + b_1 y + c_1 = 0$	$b_2 y + c_2 = 0$ has no solu	tion then	[	]
		1) $\frac{a_1}{a_2} = \frac{b_1}{b_2}$	$2) \ \frac{a_1}{a_2} \neq \frac{b_1}{b_2}$	3) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$	4) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{a_2}{a_2}$	$\frac{c_1}{c_2}$	
	37.	The number of natural	number pairs (x,y) in w	hich x> y and $\frac{5}{x} + \frac{6}{y} = 1$	is	[	]
		1) 1	2)2 <b>INT</b>	3) 3	4) 4		
	38.	The number of zeroes (1) 20	does 100! end with 2) 25	3) 30	4) 24	[	]
	39.	The larger of two suppl 1) 98°, 80°	lementary angles exceed 2) 99°, 81°	ls the smaller by 18 then 3) 96°, 84°	the angles are 4) $95^{\circ}$ , $85^{\circ}$	[	]
	40.	5 pencils and 7 pens to then the cost of one per	gether cost is Rs. 50 wh ncil and one pen	here as 7 pencils and 5 pe	ens together $\cos(2\theta) = 1$	st is Re	s 46 ]
	41	1) KS 3, KS 5	2)  Rs  3,  Rs  4	3) KS 4, KS $5$	4) KS 6, KS /	г	1
	41.	Each side of an equilate $1 > 2\sqrt{2}$	$\sim 2\sqrt{2}$	$2$ $4\sqrt{2}$	$a 2 \overline{c}$	L	]
	10	1) $2\sqrt{2}$ cm	2) $2\sqrt{3}$ cm	$3) 4\sqrt{3}$ CIII	4) $2\sqrt{0}$ cm		
	42.	Let A be the area of a square inscribed in a circle of radius r. Let B be the area of a reg					
		hexagon inscribed in th	he same circle then $\frac{B}{A}$			[	]
		1) $\frac{\sqrt{3}}{4}$	2) $\frac{2\sqrt{3}}{4}$	3) $\frac{3\sqrt{3}}{4}$	4) \sqrt{3}		
t							

www.intso.co.in -

43.	The area of a sector of 1) 4.39cm <sup>2</sup>	f a circle with radius 4cm 2) 4.35cm <sup>2</sup>	m and of angle at centre 3) 4.19cm <sup>2</sup>	e is 30° 4) 5cm <sup>2</sup>	[	]
44.	The length of the mir 5 minutes	nute hand of a clock is	14cm. Then the Area sy	wept by the minu	ite ha	nd in ]
	1) $\frac{152}{3}$ cm <sup>2</sup>	2) $\frac{154}{3}$ cm <sup>2</sup>	3) $\frac{148}{3}$ cm <sup>2</sup>	4) $\frac{136}{3}$ cm <sup>2</sup>		
45.	The Area of the circle 1) 154cm <sup>2</sup>	with radius 7cm is 2) 172cm <sup>2</sup>	3) 168cm <sup>2</sup>	4) 162cm <sup>2</sup>	[	]
46.	The total surface Area 1) 64cm <sup>2</sup>	a of a cube with side 4cm 2) 96cm <sup>2</sup>	m 3) 80cm <sup>2</sup>	4) 90cm <sup>2</sup>	[	]
47.	Curved surface area o	f the sphere with radius	s r cm is		[	]
	1) $2\pi r^2$ sq.units	2) $6\pi r^2$ sq.units	3) $4\pi r^2$ sq.units	4) $3\pi r^2$ sq.un	its	
48.	The volume of the con 1) 1232cm <sup>3</sup>	ne of height 24cm and r 2) 2164cm <sup>3</sup>	adius of base is 7cm 3) 2464cm <sup>3</sup>	4) 1576cm <sup>3</sup>	[	]
49.	Find the Area of shade	ed region if ABCD is a	square of side 14cm and	APD, BPC are s	semici	rcles
	1) $44 \text{cm}^2$	A 14 B	_		[	]
	2) 42cm <sup>2</sup>					
	3) 41cm <sup>2</sup>	$ 14 $ $\bigwedge^{P}$ $ 14 $	1			
	4) $40 \text{cm}^2$	$D_{14}$	· · · ·			
50.	The area of rectangle 1) 36cm <sup>2</sup>	with length 20cm and p 2) 120cm <sup>2</sup>	erimeter 64cm 3) 240cm <sup>2</sup>	4) 250cm <sup>2</sup>	[	]