INTSO EDUCATION

MATHEMATICS TALENT SEARCH OLYMPIAD(MTSO) 2015 - 2016

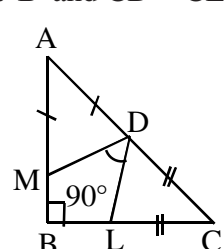| STAGE - 1	TIME	: 60 min.
CLASS : VI	**Max. Marks**	**: 50**

Instructions:

⇨ *Fill the OMR sheet completely and carefully.*

⇨ *Each question carries one mark and has only one correct answer. No negative marks*

⇨ *The question paper contains 50 questions to be answered in 60 minutes.*

1. If a = (–1) × (–1) × (–1) .... 100 times and b = (–1) × (–1) × (–1) × .... 95 times, then a + b =   [   ]
   1) –1   2) –2   3) 0   4) 1

2. The value of $2^{2015}+2^{2015}+.... +2^{2015}$(256 terms) divided by 2^{2015} is   [   ]
   1) 256   2) 2^{73} 3) 2^{2015} 4) 2015

3. The modulus of an integer x is '9' then   [   ]
   1) x = 9 only   2) x = –9 only   3) x = $\pm$ 9   4) none of these

4. How many possible solutions for integers x and y such that $\frac{1}{x}+\frac{1}{y}=\frac{1}{2}$ [   ]
   1) 4   2) 3   3) 2   4) 5

5. Sugar is sold at RS $17\frac{3}{4}$ per kg . Then the cost of $8\frac{1}{2}$ kg of a sugar.   [   ]
   1) ₹ $150\frac{7}{8}$ 2)₹ $140\frac{7}{8}$ 3) ₹ $150\frac{8}{7}$ 4) ₹ $140\frac{8}{7}$

6. If x is a natural number then $x + (x + 1) + (x + 2) + (x + 3) + ... + (x + 2006)$ is always divisible by   [   ]
   1) 2006   2) 2007   3) 2004   4) 2005

7. A car runs 16km using 1litre petrol . How much distance will it cover using $2\frac{3}{4}$ litres of petrol
   1) 46 km   2) 45 km   3) 44 km   4) 40 km   [   ]

8. The product of two numbers is $20\frac{5}{7}$. If one of the numbers is $6\frac{2}{3}$ then the other number is
   1) $3\frac{4}{27}$ 2) $3\frac{3}{28}$ 3) $4\frac{3}{28}$ 4) $4\frac{3}{28}$ [   ]

9. Which of the following fractions more than one third.   [   ]
   1) $\frac{23}{70}$ 2) $\frac{205}{819}$ 3) $\frac{26}{75}$ 4) $\frac{118}{335}$

10. The perimeter of the triangle is 24cm and the sides are 8cm, 9cm, xcm then x =   [   ]
    1) 6cm   2) 5cm   3) 7cm   4) 8cm

11. If the product of thedigits of a 4 digit number is 75, the sum of the digits of the number is

    1) 12   2) 13   3) 14   4) 15   [   ]

12. In fig $\overline{AB} \parallel \overline{CD}$ and EF is a transversel intersecting AB and CD at P and Q respectively then the measure of $\angle DQP$ is   [   ]

    1) 65°

    2) 115°

    3) 125°

    4) 75°

13. The largest positive integer 'n' for which $n^{200} < 6^{300}$ is   [   ]

    1) 12   2) 13   3) 17   4) 14

14. Each exterior angle in Equilateral triangle is ?   [   ]

    1) 120°   2) 80°   3) 60°   4) 55°

15. The sum of an angle and half of its complimentary angle is 75°   [   ]

    1) 40°   2) 50°   3) 60°   4) 80°

16. Two supplementary angles are in the ratio 3 : 2. The smaller angle Measure is   [   ]

    1) 108°   2) 81°   3) 72°   4) 68°

17. In the Adjoining figure EF = EC . Find the value of x.   [   ]

    1) 18°

    2) 36°

    3) 30°

    4) 26°

18. The measure of an angle 360° is called   [   ]

    1) Reflex angle   2) Zero angle   3) Complete angle   4) Right angle

19. The angles of a linear pair are equal then the measure of each angle is   [   ]

    1) 30°   2) 45°   3) 60°   4) 90°

20. If all the diagonals of a regular hexagon are drawn, then number of points of intersection not counting the corners of hexagon is   [   ]

    1) 6   2) 13   3) 7   4) 12

21. In a triangle $\triangle ABC$ $\angle B = 75°$, $\angle C = 35°$ then measure of $\angle A =$ [   ]

    1) 60°   2) 70°   3) 80°   4) 90°

22. What is the value of $\left(\dfrac{1}{a} + \dfrac{1}{b} \right)^{a}$ .If a = 2, b = 3   [   ]

    1) $\dfrac{36}{25}$ 2) $\dfrac{25}{36}$ 3) $\dfrac{9}{4}$ 4) $\dfrac{8}{9}$

23. The value of n if $5^{n-2} \times 3^{2n-3} = 135$ [   ]

    1) 3   2) 4   3) 6   4) 5

24. If $25^{n-1} + 100 = 5^{2n-1}$ then the value of n is   [   ]

    1) 3   2) 4   3) 2   4) 5

25. If abc = 0 then $\dfrac{\left\{\left(x^a\right)^b\right\}^c}{\left\{\left(x^b\right)^c\right\}^a} =$ [   ]

    1) 2   2) 3   3) 4   4) 1

26. If x = 1, y = –2, z = 3 then the value of $x^3 + y^3 + z^3 - 3xyz$ is   [   ]
    1) 38   2) 40   3) 28   4) 35

27. If a and b are respectively the sum and product of coefficients of terms in the expression
$x^2 + y^2 + z^2 - xy - yz - zx$ then a + 2b =   [   ]
    1) 0   2) 2   3) –2   4) 3

28. What should be added to xy + yz + zx to get –xy – yz – zx ?   [   ]
    1) –2xy – 2yz – 2zx   2) –3xy – yz – zx   3) –3xy – 3yz – 3zx   4) 2xy + 2yz + 2zx

29. If 16(3x–5) –10(4x–8) = 40 then   [   ]
    1) x = 4   2) x = 3   3) x = 5   4) x = 7

30. If 0.3x + 0.4 = 0.28x+ 1.16 then   [   ]
    1) x = 40   2) x = 0.4   3) x = 38   4) x = 3.8

31. The 25th term in the sequence (1, 2), (2, 3), (3, 5), (4, 7), (5, 11), (6, 13) ----- is   [   ]
    1) (25,47)   2) (25,49)   3) (25,37)   4) (25,97)

32. The difference between two numbers is 7,6 times the smaller plus the larger is 77 then the numbers
    1) 9 ,16   2) 10,17   3) 11,18   4) 12,19   [   ]

33. The perimeter of a rectangular sheet is 100cm . If the length is 35cm then its breadth is [   ]
    1) 10cm   2) 15cm   3) 5cm   4) 8cm

34. The area of rectangular plot if one side of which is 48m and length of its diagonal is 50m
    1) 672 M²   2) 572M²   3) 500M²   4) 762M²   [   ]

35. The base of a parallelogram is thrice its height. If the area is 867 cm² then the base and height of the parallelogram are   [   ]
    1) 42cm 14 cm   2) 45cm, 15cm   3) 48cm, 16cm   4) 51cm,17cm

36. In the Adjoining figure ΔABC is rightangled at 'B' and CD = CL and AM = AD then $\angle MDL =$
    1) 45°   [   ]

    2) 55°

    3) 65°

    4) 60°

37. The area of an equilateral triangle having each side 4cm   [   ]
    1) $2\sqrt{3}cm^2$ 2) $4\sqrt{3}cm^2$ 3) $3\sqrt{3}cm^2$ 4) $6\sqrt{3}cm^2$

38. A piece of wire of length 12cm is bent to form a square. The area of square is   [   ]
    1) 36 cm²   2) 144 cm²   3) 9 cm²   4) 12 cm²

39. The diameter of a circle whose circumference is 132cm   [   ]

    1) 32 cm   2) 22 cm   3) $\dfrac{22}{7} cm$ 4) 42 cm

40. The diameter of the wheel of a car is 77 cm then how many revolutions will it make to travel 121 k.m. [   ]
1) 2000 revolutions   2) 3000 revolutions   3) 5000 revolutions   4) 4000 revolutions

41. If A is the area and C is the circumference of a circle, then its radius is [   ]

1) $\dfrac{A}{C}$ 2) $\dfrac{2A}{C}$ 3) $\dfrac{3A}{C}$ 4) $\dfrac{4A}{C}$

42. $\overline{21y5}$ is a multiple of 9 where Y is a digit then the value of y [   ]
1) 2   2) 1   3) 10   4) 19

43. Three different integers have a sum '1' and product '36' then [   ]
1) Certainly all of them positive   2) Only one is negative
3) Exactly two of them are negative   4) All the three are negative

44. If $\overline{ab}, \overline{ba}$ are two digited numbers then $\overline{ab} + \overline{ba}$ is always divisible by [   ]
1) 9   2) 8   3) 7   4) 11

45. Nandita got an average mark 85 in her first 8 tests and average 81 for the first 9 tests then her mark in 9th test is [   ]
1) 45   2) 40   3) 49   4) 50

46. The last digit in the finite decimal representation of the number $\left(\dfrac{1}{5}\right)^{2004}$ is [   ]

1) 2   2) 4   3) 6   4) 8

47. If ratio of two natural numbers 7 : 9 . If each number is decreased by 2 the ratio becomes 3 : 4. The sum of two numbers is [   ]
1) 23   2) 32   3) 48   4) 12

48. What is the first digit of the smallest number whose sum of the digits is 2007? [   ]
1) 9   2) 8   3) 3   4) 2

49. If 981547 is divided by 5 then the remainder is [   ]
1) 4   2) 3   3) 0   4) 2

50. The digits of the year 2000 add up to 2 .In how many years has this happened since the year '1' till this year 2004 [   ]
1) 3   2) 6   3) 9   4) 10