INTSO EDUCATION

MATHEMATICS TALENT SEARCH OLYMPIAD(MTSO) 2016 - 2017

	STAGE - 1	**TIME : 60 min.**
CLASS : VIII		**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.*

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1. If the product of two numbers is 4032 and their H.C.F is 12, then the L.C.M of two numbers is   [   ]
   1) 336   2) 334   3) 236   4) 436

2. The $\dfrac{p}{q}$ form of $1.3\overline{125}$ is   [   ]

   1) $\dfrac{6556}{4995}$ 2) $\dfrac{13125}{9990}$ 3) $\dfrac{6655}{4599}$ 4) $\dfrac{6565}{4599}$

3. The greatest number of 5 digits which is exactly divisible by 24, 60, 84 and 112 is   [   ]
   1) 99320   2) 99999   3) 99889   4) 99120

4. The standard form of 19800 is   [   ]
   1) $2^3 \times 3^2 \times 5^2 \times 11^2$ 2) $2^3 \times 3^2 \times 5^2 \times 11$
   3) $2^2 \times 3^3 \times 5^3 \times 11$ 4) $2^2 \times 3^2 \times 5^3 \times 11$

5. The H.C.F of 1M96CM, 3M64CM and 4M20Cm is   [   ]
   1) 22cm   2) 32cm   3) 28cm   4) 26cm

6. The pair of rational numbers that lie between $\dfrac{-2}{7}$ and $\dfrac{1}{3}$ are   [   ]

   1) $\dfrac{-3}{7},\dfrac{-5}{7}$ 2) $\dfrac{-4}{7},\dfrac{2}{3}$ 3) $0,\dfrac{1}{4}$ 4) $0,\dfrac{2}{3}$

7. Among of the following is not a rational number   [   ]

   1) 0   2) 3.14159   3) $\dfrac{22}{7}$ 4) π

8. The value of $\left(\dfrac{-2}{5}\right) \times \left(\dfrac{-4}{9}\right) \times (-3) \times \left(\dfrac{21}{-4}\right)$ is   [   ]

   1) $\dfrac{4}{5}$ 2) $\dfrac{13}{5}$ 3) $\dfrac{12}{5}$ 4) $\dfrac{14}{5}$

9. A four digit number 'aabb' is a square number then the number is   [   ]
   1) 7744   2) 6633   3) 8855   4) 9944

10. A printer numbers the pages of a book starting with '1' and uses 3189 digits in all number of pages does the book have   [   ]
    1) 1084   2) 974   3) 537   4) 1074

11. The least possible integer of n for which 3n – 4, 4n – 5, 5n – 3 are prime numbers   [   ]
    1) 3   2) 5   3) 7   4) 2

12. For every positive integer 'n' $1^n + 8^n - 3^n - 6^n$ is always divisible by   [   ]
    1) 3   2) 7   3) 6   4) 10

13. A rectangle and a square has same perimeter of 40m. The length of the diagonal of square is
    1) 10m   2) $15\sqrt{2}$ m   3) $20\sqrt{2}$ m   4) $10\sqrt{2}$ m   [   ]

14. Among the following is a square of an odd number   [   ]
    1) 15876   2) 17161   3) 21904   4) 35722

15. The cube root of 3375 is   [   ]
    1) 25   2) 5   3) 35   4) 15

16. Among the following, would end with digit '1'   [   ]
    1) 123^2 2) 77^2 3) 82^2 4) 109^2

17. The number of natural numbers lie between 11^2 and 12^2 are   [   ]
    1) 18   2) 19   3) 22   4) 23

18. What will be the number of zeroes in the square of the number 9000   [   ]
    1) 2   2) 3   3) 4   4) 6

19. The number of integers whose square is a factor of 2000 is   [   ]
    1) 3   2) 6   3) 10   4) 12

20. In how many ways two squares can be selected from a 8×8 chess board so that they are not in the
    same row or same column   [   ]
    1) 1500   2) 1506   3) 1568   4) 1586

21. Let n be a 3 digit number such that n = sum of the squares of the digits of 'n'. The number of such
    'n' is   [   ]
    1) 0   2) 1   3) 2   4) More than 2

22. The least number of numbers to be deleted from the set $\{1, 2, 3, 4,....13, 14, 15\}$ so that the
    product of the numbers is a perfect square is   [   ]
    1) 1   2) 2   3) 3   4) 4

23. The number of primes less than 100 which have 7 as the unit digit   [   ]
    1) 6   2) 7   3) 8   4) 9

24. A student got x marks in a test. The student who got the first mark gets 48 more than this student
    who got x marks. If total marks of both the students is 110. The highest mark secured is[   ]
    1) 83   2) 92   3) 79   4) 100

25. If n = $10^{10} - 1$, the number of digit in n^3 is   [   ]
    1) 30   2) 28   3) 32   4) 27

26. If one fifth of a number added to half of it is equal to 9 less than the number. Then the number is
    1) 20   2) 28   3) 30   4) 32   [   ]

27. The denominator of a fraction is 8 more than its numerator. If 5 is added to both numerator and

    denominator the fraction reduces to $\dfrac{1}{2}$ then the fraction is   [   ]

    1) $\dfrac{5}{13}$ 2) $\dfrac{7}{15}$ 3) $\dfrac{9}{17}$ 4) $\dfrac{3}{11}$

28. How many kilograms of tea ₹80 per kilogram should be mixed with 25 kilograms of tea at ₹120
    per kilogram to get a mixture of ₹105 per kilogram   [   ]
    1) 10 kg   2) 15kg   3) 20kg   4) 18kg

29. A, B, C together having ₹470. B's money is equal to $\frac{3}{4}$ of A's money and C's money is equal to $\frac{4}{5}$ of B's money. The amount of money having A is [ ]

1) 200   2) 250   3) 150   4) 120

30. Two numbers are in the ratio 5 : 3. If they differ by 18 then the largest number is [ ]

1) 35   2) 25   3) 27   4) 45

31. Half of a herd of goats are grazing in the field and three fourths of the remaining are playing near by the rest 9 are drinking water. The number of goats in the field is [ ]

1) 42   2) 72   3) 62   4) 52

32. If $\frac{n}{2} - \frac{3n}{4} + \frac{5n}{6} = 21$ then the value of n is [ ]

1) 46   2) 36   3) 56   4) 38

33. Mohan's mother is 20 years older him. Ten years ago, she was three times as old as Mohan was then the present age of Mohan is [ ]

1) 40 years   2) 20 years   3) 30 years   4) 10 years

34. Nandita changed ₹2 into 5p, 20p, 50p coins. If the number of 5p coins was double the number of 20p coins and the 50p coins were one - fifth the 20p coins. The number of 20p coins did he got?

1) 5   2) 1   3) 10   4) 15   [ ]

35. In the adjoining diagram all lengths are gives in centimeters. The area of trapezium ABCD is

1) 225 cm^2 [ ]

2) 196 cm^2

3) 114 cm^2

4) 70 cm^2
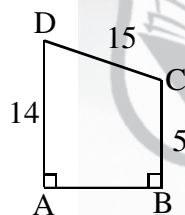
36. If BC passes through the centre of the circle, then area of the shaded region in the given figure is

1) $\frac{a^2}{2}(3-x)$ 2) $a^2\left(\frac{\pi}{2}-1\right)$ [ ]

3) $2a^2(\pi-1)$ 4) $\frac{a^2}{2}\left(\frac{\pi}{2}-1\right)$
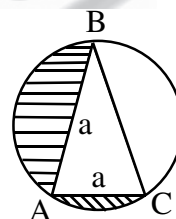
37. The circumference of the circle having the diameter 7 cm is [ ]

1) 22cm   2) 32cm   3) 11cm   4) $\frac{22}{7}$ cm

38. The area of shaded region in the given diagram is [ ]

1) 187.25 cm^2

2) 167.25 cm^2

3) 177.25 cm^2

4) 157.25 cm^2
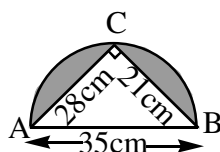
39. The area of the triangle whose 3 sides are 11cm, 13cm, 20 cm is [ ]

1) 76 cm^2 2) 66cm^2 3) 56cm^2 4) 46 cm^2

40. A 25m long pole is broken by wind from a certain height. If its top touches the ground at a distance of 5m from its foot. The area of the triangle formed by the broken pole with ground is [   ]
   1) 30m²   2) 35m²   3) 28m²   4) 40m²

41. The surface area of a cube is 486 cm². The side of the cube is [   ]
   1) 18cm   2) 12cm   3) 9cm   4) 15cm

42. Bricks of sizes 20cm × 15cm × 8cm are used to build a wall whose length breadth, and height are 15m, 0.4m and 1.2m respectively. The number of bricks required is [   ]
   1) 300   2) 400   3) 2000   4) 3000

43. An angle whose measure is more than 180° and less than 360° is called [   ]
   1) straight angle   2) reflex angle   3) complete angle   4) right angle

44. If the sum of three angles is 232°. The first of them is complement of second and the supplement of the third then the least angle is [   ]
   1) 38°   2) 52°   3) 142°   4) 48°

45. In the following diagram three lines AB, CD and EFG are parallel. The value of 'y' is [   ]
   1) 50°
   2) 60°
   3) 110°
   4) 70°
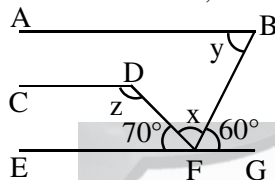
46. If in an isosceles triangle $\triangle ABC$, AB = AC and $\angle A$ = 80°. The bisector of $\angle B$ and $\angle C$ meet at D, then $\angle BDC$ = [   ]
   1) 80°
   2) 120°
   3) 130°
   4) 160°
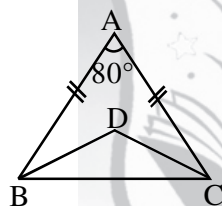
47. A 17m long ladder leans against wall. If the foot of the ladder is 8m away from the foot of the wall. How far up the wall the ladder reaches [   ]
   1) 17m   2) 8m   3) 25m   4) 15m

48. In the adjacent figure BA and BC are produced to meet CD and AD produced in E and F. Then $\angle AED + \angle CFD$ is [   ]
   1) 80°
   2) 50°
   3) 40°
   4) 160°
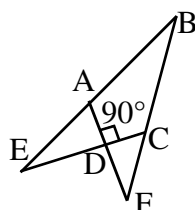
49. The angle between the diagonals of a kite is [   ]
   1) 60°   2) 180°   3) 90°   4) 135°

50. In a square ABCD, E is the midpoint of AB and length of FB is $\frac{1}{3}$ rd of BC. The area of $\triangle FBE$ is 108 units. The length of AC is [   ]
   1) $24\sqrt{2}$ units
   2) $26\sqrt{2}$ units
   3) $12\sqrt{2}$ units
   4) $36\sqrt{2}$ units