INTSO EDUCATION

MATHEMATICS TALENT SEARCH OLYMPIAD(MTSO) 2015 - 2016

STAGE - 2 **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. ¼ (one fourth) marks will be deducted for indicating incorrect response of each question.*
- ⇨ *The question paper contains 50 questions to be answered in 60 minutes.*

1. The product of two rational numbers is $\frac{-28}{81}$ and one of the numbers is $\frac{14}{27}$, the second number is [ ]

   1) $\frac{2}{3}$ 2) $\frac{3}{2}$ 3) $-\frac{2}{3}$ 4) $-\frac{3}{2}$

2. If 24 trousers of equal size can be prepared in 54 meters of cloth then the length of the cloth required for each trouser is [ ]

   1) $\frac{9}{4}$ meters 2) $\frac{4}{9}$ meters 3) $\frac{3}{4}$ meters 4) $\frac{7}{8}$ meters

3. The cost of $7\frac{2}{3}$ meters of rope is Rs. $12\frac{3}{4}$, the cost per meter is [ ]

   1) Rs. $\frac{62}{93}$ 2) Rs. $\frac{61}{92}$ 3) Rs. $2\frac{61}{92}$ 4) Rs. $3\frac{62}{91}$

4. What should be added to $\left(\frac{1}{2}+\frac{1}{3}+\frac{1}{5}\right)$ to get 3 [ ]

   1) $\frac{59}{30}$ 2) $\frac{69}{29}$ 3) $\frac{59}{29}$ 4) $\frac{67}{30}$

5. The sum of the digits of the number 10^n-1 is 3798. The value of n is [ ]

   1) 431 B) 673 3) 422 4) 501

6. A certain number has exactly eight factors including 1 and itself two of its factors are 21 and 35. The number is [ ]

   1) 105 2) 210 3) 420 4) 525

7. The product of Hari's age in years on his last birthday and his age now in complete months is 1800. Hari's age on his last birthday was [ ]

   1) 9 2) 10 3) 12 4) 15

8. The value of x if $\frac{x}{2}+\frac{x}{3}-\frac{x}{4}=7$ is [ ]

   1) 12 2) 13 3) 11 4) 10

9. The value of x if $\frac{(4+x)(5-x)}{(2+x)(7-x)}=1$ is [ ]

1) $\frac{2}{3}$ 2) $\frac{3}{2}$ 3) $\frac{5}{2}$ 4) $\frac{2}{5}$

10. A number 56 greater than the average of its third, quarter and one-twelth is [ ]
1) 72 2) 82 3) 62 4) 74

11. A number consists of two digits whose sum is 8. If 18 is added to the number its digits are reversed, the number is [ ]
1) 53 2) 35 3) 45 4) 25

12. A man sold an article for Rs. 495 and gained 10% on it. the cost price of article is [ ]
1) Rs. 450 B) Rs. 350 3) Rs. 250 4) Rs. 490

13. The product of 3 consecutive odd numbers is 357627. The sum of the numbers is [ ]
1) 213 2) 243 3) 153 4) 209

14. If $36a^4 = a^6$ then a^3 is equal to [ ]

1) $\frac{1}{6}a^6$ 2) $6a^4$ 3) $\frac{1}{6}a^2$ 4) $6a^2$

15. Sum of all positive integers less then 100 which leave a remainder '1' when divided by 3 and leave a remainder '2' when divided by 4 is [ ]
1) 416 2) 1717 3) 1250 4) 1314

16. The greatest number of two digits which is a perfect square. [ ]
1) 64 2) 49 3) 81 4) 100

17. The smallest number by which 28812 must be divided so that the Quitient become a perfect square. [ ]
1) 2 2) 3 3) 4 4) 5

18. The pythagorean triplet whose one number is 6 [ ]
1) 6, 8, 10 2) 6, 4, 5 3) 6, 8, 5 4) 6, 4, 10

19. The area of square field is 5184 m^2. A rectangular field whose length is twice its breadth has its perimeter equal to the perimeter of the square field. The area of the rectangular field is [ ]
1) 4608 m^2 2) 3608 m^2 3) 4806 m^2 4) 3806 m^2

20. The square root of 2304 is [ ]
1) 42 2) 48 3) 52 4) 58

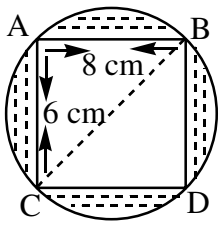
21. The cube root of a rational number $\frac{-216}{42875}$ is [ ]

1) $\frac{6}{35}$ 2) $-\frac{6}{35}$ 3) $\frac{6}{25}$ 4) $-\frac{6}{25}$

22. Three cubes of sides 3 cm, 4 cm and 5 cm are melted and a new cube is formed the side of the new cube is [ ]
1) 6 cm 2) 8 cm 3) 12 cm 4) 9 cm

23. The base of a parallelogram is thrice its height. If the area is 867 cm^2, the height of the parallelogram is [ ]
1) 17 cm 2) 51 cm 3) 16 cm 4) 48 cm

24. The area of shaded region in the given figure is [ ]



1) 20.5 cm^2

2) 22. 5 cm^2

3) 28. 5 cm^2

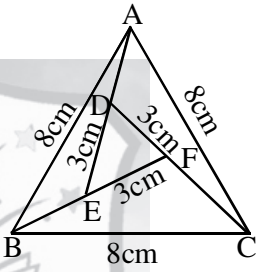
4) 30. 5 cm^2

25. The area of a rhombus is 240 cm^2 and one of the diagonal is 16 cm, the other diagonal is
1) 30 cm 2) 25 cm 3) 40 cm 4) 20 cm [ ]

26. The area of a trapezium is 105 cm^2 and its height is 7 cm. If one of the parallel sides is double that of the other, the two parallel sides are [ ]
1) 10 cm, 20 cm 2) 8 cm, 16 cm 3) 15 cm, 30 cm 4) 12 cm, 24 cm

27. Five books and two pencils cost Rs. 79 but two books and 5 pencils cost Rs. 40. The total cost of one book and one pencil is [ ]
1) Rs. 39 2) Rs. 19.50 3) Rs. 17 4) Rs. 23. 80

28. In the adjoining figure ABC, DEF are equilateral triangles. Then the possible value of AE + BD + CF is [ ]



1) 6.9 cm

2) 7.1 cm

3) 5.2 cm

4) 8.3 cm

29. What will be the labour charges for digging a cuboidal pit 8 m long, 6 m broad and 3 m deep at the rate of Rs. 20 per m^3 [ ]
1) Rs. 2000 2) Rs. 2500 3) Rs. 2800 4) Rs. 2880

30. The total surface area of a cube whose volume is 512 m^3 [ ]
1) 384 m^2 2) 284 m^2 3) 256 m^2 4) 128 m^2

31. The area of a square is 100 cm^2, the perimeter of the square is [ ]
1) 80 cm^2 2) 40 cm^2 3) 60 cm^2 4) 50 cm^2

32. The area of circle with radius 28 cm is [ ]
1) 2484 cm^2 2) 2464 cm^2 3) 1864 cm^2 4) 1684 cm^2

33. Which of the following is a Regular polygon [ ]
1) Rectangle 2) Rhombus 3) Square 4) all

34. No.of diagonals in a regular hexagon [ ]
1) 6 2) 15 3) 9 4) 12

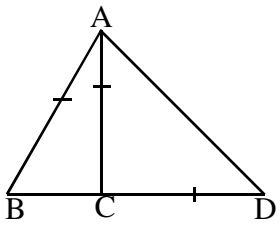
35. In a Quadrilateral ABCD, CO and DO are the bisectors of $\angle C$ and $\angle D$. The $\angle COD$ equals to

1) $\angle A + \angle B$ 2) $\frac{1}{2}[\angle A + \angle B]$ 3) $90 - \frac{1}{2}[\angle A + \angle B]$ 4) $\frac{1}{3}[\angle A + \angle B]$ [ ]

36. The ratio of two sides of a parallelogram is 3 :5 and its perimeter is 48m. The largest side of the parallelogram is [ ]
1) 9 m 2) 15 M 3) 16 M 4) 24 M

37. The number of measurerments required to construct a Rhombus is [ ]
1) 2 2) 3 3) 4 4) 1

38. In the figure AB = AC = CD and $\angle BAC = 32°$ then $\angle BAD$ is [ ]



1) 37°
2) 64°
3) 69°
4) 74°

39. The size of a red blood cell is 0.000007m and the size of the plant cell is 0.00001275 m, the ratio of size of red blood cell to size of plant cell is [ ]
1) 1 : 2 2) 2 : 1 3) 3 : 1 4) 1 : 3

40. For any two non zero rational numbers a and b. $a^7 \div a^{12}$ is equal to [ ]
1) a^5 2) a^{-19} 3) a^{-5} 4) a^{19}

41. 1 Micron is equals to [ ]
1) $\frac{1}{1000000}$ metre 2) $\frac{1}{10000000}$ metre 3) $\frac{1}{100000}$ metre 4) $\frac{1}{100000000}$ metre

42. The remainder when $1^5 + 2^5 + 3^5 + \ldots\ldots\ldots + 99^5 + 100^5$ is divided by 4 is [ ]
1) 0 2) 2 3) 3 4) 1

43. The last two digits of 3^{1997} is [ ]
1) 33 2) 43 3) 63 4) 53

44. The value of $(5a^6) \times (-10\ ab^2) \times (-2.1\ a^2b^3)$ for a = 1 and b = ½ [ ]
1) $\frac{105}{42}$ 2) $\frac{108}{37}$ 3) $\frac{105}{32}$ 4) $\frac{105}{33}$

45. The value of $x^2 + y^2$ if x – y = 7 and xy = 9 [ ]
1) 37 2) 47 3) 67 4) 57

46. The Quotient when $a^{12} + a^6b^6 + b^{12}$ by $a^6 - a^3b^3 + b^6$ is [ ]
1) $a^6 - a^3b^3 + b^6$ 2) $a^6 + a^3b^3 + b^6$ 3) $a^6 - a^3b^3 - b^6$ 4) $a^6 + a^3b^3 - b^6$

47. The degree of constant polynomial is [ ]
1) 3 2) 2 3) 0 4) can't define

48. If P is a prime number, a is a natural number and $p = a^2 - 1$. The number of divisers of a + p is
1) 3 2) 4 3) 2 4) 1 [ ]

49. A natural number 'n' has exactly two divisors and (n+1) has 3 divisors. The number of divisors of (n+2) is [ ]
1) 2 2) 3
3) 4 4) depends on the value of n

50. The degree of bi-Quadratic polynomial is [ ]
1) 2 2) 3 3) 4 4) 5