Duration : 60 min.
Class : 10th

Maximum Marks : 180
Subject : MATHEMATICS

International Talent Search Examination - 2022-23

अंतर्राष्ट्रीय प्रतिभा खोज परीक्षा - २०२२-२३

Organized by

Savitri Skill Development Institute, Training Partner with
Ministry of Micro Small & Medium Enterprises (MSME), Govt. of India.

TEST BOOKLET

Name : .....

Class : ..... School: .....

Father's Name : ..... Father's Occupation : .....

Mother's Name : ..... Mother's Occupation : .....

Categories : Gen ☐ OBC ☐ SC ☐ ST ☐

Correspondence Address :.....

Date of Birth : ☐☐ ☐☐ ☐☐☐☐

Father's Contact No : ☐☐☐☐☐☐☐☐☐☐

Home/Mother's Contact No. : ☐☐☐☐☐☐☐☐☐☐

WhatsApp No. : ☐☐☐☐☐☐☐☐☐☐

Basic Instructions:

i. Ensure that your personal data has been entered correctly.
ii. Immediately after opening the test booklet verify that all the pages are printed properly and are in order. If there is a problem with your test booklet, immediately inform the invigilator. You will provided with the replacement.
iii. All questions in are compulsory.
iv. For every correct answer you will be awarded with 4 marks and for all incorrect answer 1 mark will be deducted.
v. Directions for answering the questions are given. Read those directions carefully and answer the question by circling the bubble in the OMR Sheet Provided to you. Test booklet/OMR Sheet will be submitted at the end of the examination.
vi. Follow the instructions given by the invigilator. Students found violating the instructions will be disqualified.
vii. Rough work can be done separately or on the Question paper.
viii. Please fill the bubbles in OMR sheet with Blue or Black pen only.
ix. Do not tear the question paper or OMR sheet else you will be disqualified in the examination.

CLASS-10 MATHEMATICS

1. If two numbers are in the ratio 5 : 7 and if 3 is subtracted from each of them, the ratio becomes 2 : 3, then the numbers are
   (A) 15 and 21 (B) 30 and 42 (C) 10 and 14 (D) none of these

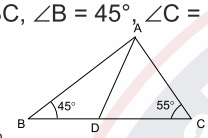
2. The supplement of the angle 34° 30' is
   (B) 55° 30' (B) 56° (C) 145° (D) 145° 30'

3. If the altitudes from two vertices of a triangle to the opposite sides are equal, then the triangle is
   (A) scalene (B) isosceles (C) right angle (D) equilateral

4. In a parallelogram ABCD, ∠D = 115°, the measure of ∠A and ∠B is
   (A) 65° and 115° (B) 65° and 105° (C) 75° and 115° (D) 75° and 105°

5. A number is increased by 10% and then it is decreased by 10%. The net increase or decrease percent is
   (A) 1% increase (B) 1% decrease (C) 1.5% decrease (D) no change

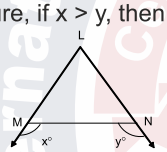
6. In ΔABC, ∠B = 45°, ∠C = 55° and bisector of ∠A meets BC at a point D. Then ∠ADC is



   (A) 85° (B) 95° (C) 75° (D) 60°

7. The area of a quadrant of a circle whose circumference is 22 cm is
   (A) 9 cm^2 (B) 10 cm^2 (C) 9.625 cm^2 (D) 9.25 cm^2

8. In the given figure, if x > y, then



   (A) ∠LMN > ∠LNM (B) ∠LMN = ∠LNM (C) ∠LMN < ∠LNM (D) none of these

9. Total number of prime numbers between 1 and 100 are
   (A) 24 (B) 25 (C) 26 (D) 27

10. The angle which is complement of itself is
    (A) 90° (B) 15° (C) 75° (D) 45°

11. An angle whose measure is more than 180° and less than 360°, is
    (A) obtuse angle (B) straight angle (C) reflex angle (D) complementary angles

12. The enrollment of students in a school increases from 900 to 936. The percent increase in the enrollment is
    (A) 2% (B) 4% (C) 6% (D) 8%

13. The value of x in $\frac{5}{3x-2} - \frac{1}{8} = 0$, $x \neq \frac{2}{3}$ is
    (A) 10 (B) 12 (C) 14 (D) 16

14. Two numbers are in the ratio 4 : 5. The difference of their squares is 81. Then the numbers are
    (A) 8 : 10 (B) 20 : 25 (C) 12 : 15 (D) 16 : 20

15. The triplicate ratio of 5 : 2 is
    (A) $\sqrt{5} : \sqrt{2}$ (B) 125 : 8 (C) $\sqrt[3]{5} : \sqrt[3]{2}$ (D) none of these

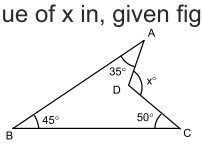
16. Simplest rationalizing factor of $\sqrt{5} - \sqrt{3}$ is
    (A) $\sqrt{5} + \sqrt{3}$ (B) 2 (C) $\sqrt{5} - \sqrt{3}$ (D) $\frac{1}{\sqrt{5} + \sqrt{3}}$

17. A wire is looped in the form of a circle of radius 28 cm. It is re-bent into a square form. The length of the side of the square is
    (A) 44 cm (B) 40 cm (C) 41 cm (D) 42 cm

18. The area of a triangle whose sides are 13 cm, 14 cm and 15 cm, is
(A) 91 cm^2 (B) 105 cm^2 (C) 140 cm^2 (D) 84 cm^2

19. The point of concurrency of the three altitudes of a triangle is called its
(A) circumcentre (B) incentre (C) orthocentre (D) centroid

20. The value of x in, given figure



(A) 100° (B) 50° (C) 125° (D) 130°

21. If $x = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ and $y = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$, then the value of $x^2 + y^2$ is

(A) 78 (B) 87 (C) 98 (D) 100

22. If each interior angle of a regular polygon is 108°, then the number of sides of the regular polygon is
(A) 5 (B) 7 (C) 6 (D) 8

23. Of the three angles of a triangle, one is twice the smallest and another is three times the smallest, then the greatest angle of the triangle is
(A) 60° (B) 45° (C) 75° (D) 90°

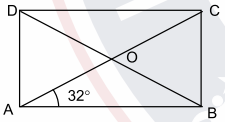
24. The value of 'a' in $2x^3 + ax^2 + 11x + a + 3$ for which it is exactly divisible by (2x - 1) is
(A) 7 (B) - 7 (C) 6 (D) - 6

25. The perimeter of a sector of a circle of radius 5.2 cm is 16.4 cm. Then the area of the sector is
(A) 15.6 cm^2 (B) 18 cm^2 (C) 14 cm^2 (D) none of these

26. If $x^2 + px + q = (x + a)(x + b)$, then factors of $x^2 + pxy + qy^2$ are
(A) (x + by) (ax + y) (B) (ax + y) (bx + y) (C) (x + ay) (x + by) (D) (ax + by) (x + y)

27. If the C.P. of 15 tables be equal to the S.P. of 20 tables. Then the loss percent is
(A) 25% (B) 10% (C) 15% (D) 20%

28. ABCD is a rectangle with $\angle BAC = 32°$, then $\angle DBC$ is



(A) 32° (B) 54° (C) 58° (D) none of these

29. If $\sqrt{pq} = 6$ and p and q are positive integers, then which of the following could not be a value of (p - q)?
(A) 0 (B) - 9 (C) 5 (D) 8

30. If $f(x + 1) = x^2 - 3x + 2$, then f (x) is equal to
(A) $x^2 - 4x + 5$ (B) $x^2 - 5x + 6$ (C) $x^2 + 5x - 6$ (D) $x^2 - x + 1$

31. If $x^2 + y^2 = 13$ and xy = 2.5, then $x^2 - y^2$ is equal to
(A) 10 (B) 12 (C) 14 (D) 15

32. The perimeter of a rectangle is 360 cm. If its length is increased by 10% and its breadth is decreased by 20%, we get the same perimeter. The length and breadth of the rectangle (in cm) are
(A) 100, 80 (B) 120, 60 (C) 200, 160 (D) 240, 120

33. The denominator of a rational number is greater than its numerator by 1. If the numerator is increased by 10 and the denominator is increased by 1, the number obtained is 3. The rational number is
(A) $\frac{1}{2}$ (B) $\frac{2}{3}$ (C) $\frac{3}{4}$ (D) $\frac{4}{5}$

34. Sum of the digits of a two-digit number is 12. The given number exceeds the number obtained by interchanging the digits by 36. The number is
(A) 66 (B) 75 (C) 84 (D) 93

35. If $\left(\sqrt{\frac{3}{7}}\right)^{X+1} = \frac{343}{27}$, then x is equal to
(A) - 7 (B) - 5 (C) - 4 (D) - 2

36. If the sum of the two digit numbers formed by two different digits is a perfect square, then sum of the digits is
(A) 10 (B) 11 (C) 12 (D) 13

37. Let A and B are two expressions whose L.C.M. is 'a' and H.C.F. is 'b' and A + B = a + b. Then
(A) 3A + B = 3a + 2b (B) 2a + b = 2B + 3A (C) $a^2 - b^2 = A^2 + B^2$ (D) $a^2 + b^2 = A^2 + B^2$

38. If the point P (p, q) is equidistant from the points A (a + b, b - a) and B (a - b, a + b), then
(A) ap = bq (B) bp = aq (C) ap + bq = 0 (D) bp + aq = 0

39. If a cone and a sphere have equal radii and have equal volumes, then the ratio of height of the cone to the diameter of the sphere is
(A) 1 : 1 (B) 1 : 2 (C) 2 : 1 (D) 3 : 2

40. If the base radius of a cylinder is decreased by 50% and the height is increased by 50% to form a new cylinder, then the increase/decrease in the volume is
(A) 0% (B) 25% (C) 62.5% (D) 75%

41. A cone of height 7 cm and base radius 1 cm is carved from a block of wood which measures 10 cm X 5 cm X 2 cm. The percentage of wood wasted in this process is (take $\pi = \frac{22}{7}$)
(A) $7\frac{1}{2}\%$ (B) $46\frac{1}{3}\%$ (C) $53\frac{2}{3}\%$ (D) $92\frac{2}{3}\%$

42. The length of the longest rod that can be placed in a hall of length 10 m, breadth 6 m and height 4 m is
(A) $2\sqrt{38}$ m (B) $4\sqrt{38}$ m (C) $2\sqrt{19}$ m (D) 19 m

43. If the numbers 25, 22, 21, x + 6, x + 4, 9, 8, 6 are in order and their median is 16, then the value of x is
(A) 9 (B) 10 (C) 11 (D) 12

44. The numbers 3, 5, 7 and 9 have their respective frequencies x - 2, x + 2, x - 3 and x + 3. If their mean is 6.5, then x is equal to
(A) 3 (B) 4 (C) 5 (D) 6

45. The cube root of 210644875 using the fact that 210644875 = 42875 ´ 4913 is
(A) 795 (B) 695 (C) 595 (D) 495