Duration : 60 min.
Class : 9th

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-9 MATHEMATICS

1. Value of $\sqrt[4]{(81)^{-2}}$ is

(A) $\frac{1}{9}$ (B) $\frac{1}{3}$ (C) 9 (D) $\frac{1}{81}$

2. Value of $(256)^{0.16} \times (256)^{0.09}$ is

(A) 4 (B) 16 (C) 64 (D) 256.25

3. Which of the following is equal to x?

(A) $x^{\frac{12}{7}} - x^{\frac{5}{7}}$ (B) $\sqrt[12]{\left(x^4\right)^{\frac{1}{3}}}$ (C) $\left(\sqrt{x^3}\right)^{\frac{2}{3}}$ (D) $x^{\frac{12}{7}} \times x^{\frac{7}{12}}$

4. If the coordinates of the two points are P (–2, 3) and Q(–3, 5), then (abscissa of P) – (abscissa of Q) is

(A) – 5 (B) 1 (C) – 1 (D) – 2

5. If P (5, 1), Q (8, 0), R (0, 4), S (0, 5) and O (0, 0) are plotted on the graph paper, then the point(s) on the x-axis are

(A) P and R (B) R and S (C) Only Q (D) Q and O

6. Abscissa of a point is positive in

(A) I and II quadrants (B) I and IV quadrants
(C) I quadrant only (D) II quadrant only

7. Euclid divided his famous treatise "The Elements" into :

(A) 13 chapters (B) 12 chapters (C) 11 chapters (D) 9 chapters

8. The total number of propositions in the Elements are :

(A) 465 (B) 460 (C) 13 (D) 55

9. Boundaries of solids are :

(A) surfaces (B) curves (C) lines (D) points

10. Degree of the zero polynomial is

(A) 0 (B) 1 (C) Any natural number
(D) Not defined

11. If $p(x) = x^2 - 2\sqrt{2}x + 1$, then $p(2\sqrt{2})$ is equal to

(A) 0 (B) 1 (C) $4\sqrt{2}$ (D) $8\sqrt{2} + 1$

12. The value of the polynomial $5x - 4x^2 + 3$, when $x = -1$ is

(A) -6 (B) 6 (C) 2 (D) -2

13. Which of the following is a factor of $(x + y)^3 - (x^3 + y^3)$?

(A) $x^2 + y^2 + 2xy$ (B) $x^2 + y^2 - xy$ (C) xy^2 (D) $3xy$

14. The coefficient of x in the expansion of $(x + 3)^3$ is

(A) 1 (B) 9 (C) 18 (D) 27

15. If $\frac{x}{y} + \frac{y}{x} = -1$ $(x, y \neq 0)$, the value of $x^3 - y^3$ is

(A) 1 (B) -1 (C) 0 (D) $\frac{1}{2}$

16. If we multiply or divide both sides of a linear equation with a non-zero number, then the solution of the linear equation :

(A) Changes

(B) Remains the same

(C) Changes in case of multiplication only

(D) Changes in case of division only

17. How many linear equations in x and y can be satisfied by $x = 1$ and $y = 2$?

(A) Only one (B) Two (C) Infinitely many (D) Three

18. The point of the form (a, a) always lies on :

(A) x-axis (B) y-axis

(C) On the line $y = x$ (D) On the line $x + y = 0$

19. An exterior angle of a triangle is 105° and its two interior opposite angles are equal. Each of these equal angles is

(A) $37\frac{1}{2}°$ (B) $52\frac{1}{2}°$ (C) $72\frac{1}{2}°$ (D) 75°

20. The angles of a triangle are in the ratio 5 : 3 : 7. The triangle is

(A) an acute angled triangle (B) an obtuse angled triangle

(C) a right triangle (D) an isosceles triangle

21. If one of the angles of a triangle is 130°, then the angle between the bisectors of the other two angles can be

(A) 50° (B) 65° (C) 145° (D) 155°

22. In Δ PQR, if ∠R > ∠Q, then

(A) QR > PR (B) PQ > PR (C) PQ < PR (D) QR < PR

23. . In triangles ABC and PQR, AB = AC, ∠C = ∠P and ∠B = ∠Q. The two triangles are

(A) isosceles but not congruent (B) isosceles and congruent

(C) congruent but not isosceles (D) neither congruent nor isosceles

24. . In triangles ABC and DEF, AB = FD and ∠A = ∠D. The two triangles will be congruent by SAS axiom if

(A) BC = EF (B) AC = DE (C) AC = EF (D) BC = DE

25. . The figure formed by joining the mid-points of the sides of a quadrilateral ABCD, taken in order, is a square only if,

(A) ABCD is a rhombus

(B) diagonals of ABCD are equal

(C) diagonals of ABCD are equal and perpendicular

(D) diagonals of ABCD are perpendicular.

26. . The diagonals AC and BD of a parallelogram ABCD intersect each other at the point O. If ∠DAC = 32° and ∠AOB = 70°, then ∠DBC is equal to

(A) 24° (B) 86° (C) 38° (D) 32°

27. . Which of the following is not true for a parallelogram?

(A) opposite sides are equal

(B) opposite angles are equal

(C) opposite angles are bisected by the diagonals

(D) diagonals bisect each other.

28. ABCD is a quadrilateral whose diagonal AC divides it into two parts, equal in area, then ABCD

(A) is a rectangle (B) is always a rhombus

(C) is a parallelogram (D) need not be any of (A), (B) or (C)

29. If a triangle and a parallelogram are on the same base and between same parallels, then the ratio of the area of the triangle to the area of parallelogram is

(A) 1 : 3 (B) 1 : 2 (C) 3 : 1 (D) 1 : 4

30. ABCD is a trapezium with parallel sides AB = a cm and DC = b cm (Fig. 9.6). E and F are the mid-points of the non-parallel sides. The ratio of ar (ABFE) and ar (EFCD) is

(A) $a : b$

(B) $(3a + b) : (a + 3b)$

(C) $(a + 3b) : (3a + b)$

(D) $(2a + b) : (3a + b)$

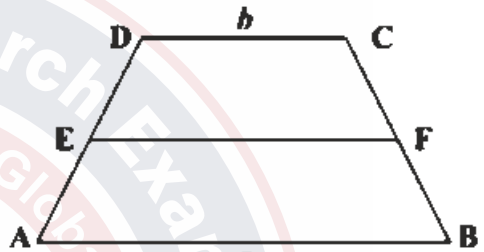

Fig. 9.6

31. In Fig. 10.7, if $\angle DAB = 60°$, $\angle ABD = 50°$, then $\angle ACB$ is equal to:

(A) 60° (B) 50° (C) 70° (D) 80°

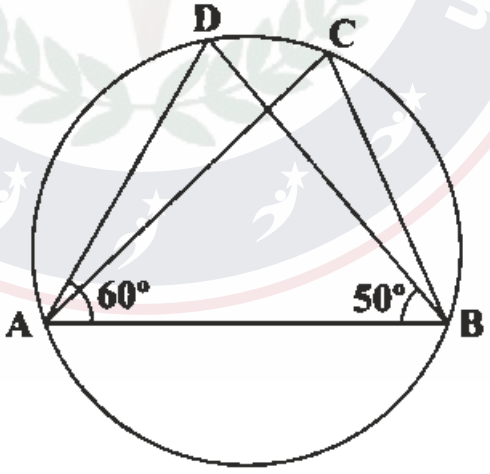

Fig. 10.7

32. ABCD is a cyclic quadrilateral such that AB is a diameter of the circle circumscribing it and $\angle ADC = 140°$, then $\angle BAC$ is equal to:

(A) 80° (B) 50°

(C) 40° (D) 30°

33. In Fig. 10.8, BC is a diameter of the circle and $\angle BAO = 60°$. Then $\angle ADC$ is equal to :

(A) 30° (B) 45°

(C) 60° (D) 120°

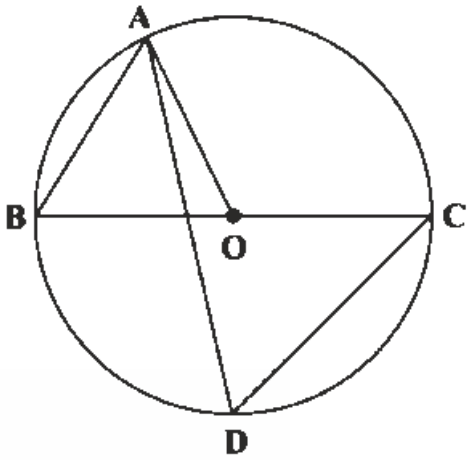

Fig. 10.8

34. With the help of a ruler and a compass it is not possible to construct an angle of :

(A) 37.5° (B) 40° (C) 22.5° (D) 67.5°

35. The construction of a triangle ABC, given that BC = 6 cm, $\angle B = 45°$ is not possible when difference of AB and AC is equal to:

(A) 6.9 cm (B) 5.2 cm (C) 5.0 cm (D)4.0 cm

36. The construction of a triangle ABC, given that BC = 3 cm, $\angle C = 60°$ is possible when difference of AB and AC is equal to :

(A) 3.2 cm (B) 3.1 cm (C) 3 cm (D) 2.8 cm

37. The sides of a triangle are 35 cm, 54 cm and 61 cm, respectively. The length of its longest altitude

(A) $16\sqrt{5}$ cm (B) $10\sqrt{5}$ cm (C) $24\sqrt{5}$ cm (D) 28 cm

38. The area of an isosceles triangle having base 2 cm and the length of one of the equal sides 4 cm, is

(A) $\sqrt{15}$ cm^2 (B) $\sqrt{\frac{15}{2}}$ cm^2 (C) $2\sqrt{15}$ cm^2 (D) $4\sqrt{15}$ cm^2

39. The edges of a triangular board are 6 cm, 8 cm and 10 cm. The cost of painting it at the rate of 9 paise per cm^2 is

(A) Rs 2.00 (B) Rs 2.16 (C) Rs 2.48 (D) Rs 3.00

40. The number of planks of dimensions (4 m × 50 cm × 20 cm) that can be stored in a pit which is 16 m long, 12m wide and 4 m deep is

(A) 1900 (B) 1920 (C) 1800 (D) 1840

41. The length of the longest pole that can be put in a room of dimensions (10 m × 10 m × 5m) is

(A) 15 m (B) 16 m (C) 10 m (D) 12 m

42. . The radius of a hemispherical balloon increases from 6 cm to 12 cm as air is being pumped into it. The ratios of the surface areas of the balloon in the two cases is

(A) 1 : 4 (B) 1 : 3 (C) 2 : 3 (D) 2 : 1

43. . In a survey of 364 children aged 19-36 months, it was found that 91 liked to eat potato chips. If a child is selected at random, the probability that he/she does not like to eat potato chips is :

(A) 0.25 (B) 0.50 (C) 0.75 (D) 0.80

44. . In a medical examination of students of a class, the following blood groups are recorded:

Blood group	A	AB	B	O
Number of students	10	13	12	5

A student is selected at random from the class. The probability that he/she has blood group B, is :

(A) $\frac{1}{4}$ (B) $\frac{13}{40}$ (C) $\frac{3}{10}$ (D) $\frac{1}{8}$

45. . Two coins are tossed 1000 times and the outcomes are recorded as below :

Number of heads	2	1	0
Frequency	200	550	250

Based on this information, the probability for at most one head is

(A) $\frac{1}{5}$ (B) $\frac{1}{4}$ (C) $\frac{4}{5}$ (D) $\frac{3}{4}$