International Talent Search Examination - 2023-24

अंतर्राष्ट्रीय प्रतिभा खोज परीक्षा – २०२३-२४

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. The point where $4x + 3y = 7$ cuts y – axis is _____
   (A) $(0, 7)$ (B) $(0, 7/3)$ (C) $(0, -4)$ (D) $(0, 3)$

2. Find the remainder when $2x^4 - 2x^3 + 3x^2 - 3x + 4$ is divided by $x - 1$
   (A) 1 (B) 2 (C) 3 (D) 4

3. In the given figure, $PQ = QR$, $\angle QPR = 48°$, $\angle SRP = 18°$, then $\angle PQR =$?
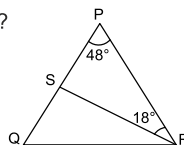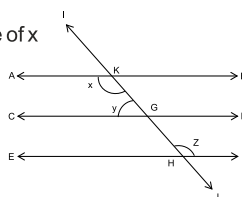
   (A) 48° (B) 84° (C) 30° (D) 36°

4. The rational form of $2.74\overline{35}$ is?
   (A) $\dfrac{27161}{9999}$ (B) $\dfrac{27}{99}$ (C) $\dfrac{27161}{9900}$ (D) $\dfrac{27161}{9000}$

5. Rational number between $\dfrac{-5}{6}$ and $\dfrac{7}{8}$ is?
   (A) 0 (B) $\dfrac{9}{10}$ (C) $\dfrac{12}{11}$ (D) $-\dfrac{3}{2}$

6. By how much does $\sqrt{12} + \sqrt{18}$ exceed $\sqrt{3} + \sqrt{2}$?
   (A) $2\left(\sqrt{3} - \sqrt{2}\right)$ (B) $2\left(\sqrt{3} + \sqrt{2}\right)$ (C) $\sqrt{3} + 2\sqrt{2}$ (D) $\sqrt{2} - 4\sqrt{3}$

7. What is the area of triangle formed by line $5x + 4y - 20 = 0$ and coordinate axes?
   (A) 12 sq. units (B) 20 sq. units (C) 15 sq. units (D) 10 sq. units

8. $\left[\dfrac{169^{-3}}{(196)^{-8}}\right]^{\frac{1}{48}} = ?$
   (A) $\dfrac{14^{1/3}}{13^{1/8}}$ (B) $\dfrac{14^{-1/3}}{13^{-1/8}}$ (C) $\dfrac{14^{1/8}}{13^{1/3}}$ (D) None of these

9. If $x - a$ is a factor of $x^3 - 3x^2a + 2a^2x + b$, then $b =$?
   (A) 0 (B) 1 (C) 2 (D) 3

10. The point is at a distance of 5 units from x – axis and 7 units from y – axis. Then, the coordinates of point could be _____
    (A) $(5, 7)$ (B) $(7, 5)$ (C) $(0, 7)$ (D) $(7, 0)$

11. The distance of the point $P\,(-6, 8)$ from the origin is?
    (A) 8 units (B) $2\sqrt{7}$ units (C) 10 units (D) 6 units

12. For what value of a and b, the lines $ax - 5y = -1$ and $x - by = -1$ will intersect each other at point $(-2, -1)$?
    (A) $a = 3, b = 1$ (B) $a = -3, b = 1$ (C) $a = 3, b = -1$ (D) $a = -3, b = -1$

13. The length of a rectangle exceeds its breadth by 7 cm. If the length is decreased by 4 cm and the breadth is increased by 3 cm, the area of new rectangle is same as the area of the original rectangle. The perimeter of original rectangle is equal to?
    (A) 50 cm (B) 46 cm (C) 54 cm (D) 40 cm

14. In the given figure, $AB \parallel HG$, $\angle CEF = 42°$, $\angle EFC = 6a - 5°$ and $\angle CDH = 10a + 5°$, then the value of 'a' is?
    (A) 8
    (B) 9
    (C) 7.5
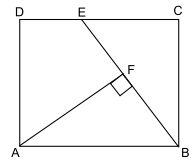   (D) 10
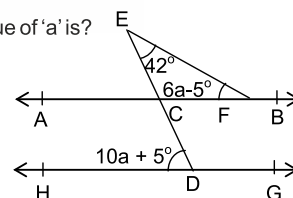
15. In figure if $AB \parallel CD \parallel EF$ and $y : z = 3 : 7$, then find the value of x
    (A) 126°
    (B) 54°
    (C) 115°
    (D) 112°

16. Value of 3^{2^1} is _____
(A) 1   (B) 3^6 (C) 9   (D) 3

17. In the figure, if ABCD is a square in which BE = 36 cm and AF = 25 cm then the area of the square = ?
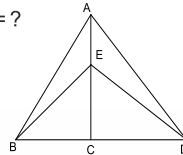
(A) 625 cm^2 (B) 676 cm^2 (C) 729 cm^2 (D) 900 cm^2

18. In $\triangle$ ABC, D is mid point of AB, E is mid point of DB and 'F' is mid point of BC. If area of $\triangle$ ABC is 32 cm^2 then Ar (AEF) in cm^2 is?
(A) 6   (B) 8   (C) 12   (D) 9

19. If BC : CD = 2 : 3, AE : EC = 3 : 4, then ar ($\triangle$ECD) : ar ($\triangle$AEB) = ?

(A) 2 : 1
(B) 2 : 3
(C) 3 : 5
(D) 4 : 3

20. If the ratio of the legs of a right triangle is 1 : 2, then the ratio of the corresponding segments of the hypotenuse made by a perpendicular upon it from the right angled vertex is?
(A) 1 : 4   (B) $1:\sqrt{2}$ (C) 1 : 2   (D) $1:\sqrt{5}$

21. The medians of a right triangle which are drawn from the vertices of the acute angles are 5 and $\sqrt{40}$. The value of the hypotenuse is?
(A) 10   (B) $2\sqrt{40}$ (C) 13   (D) $2\sqrt{13}$

22. If ABCD is a cyclic quadrilateral AB = 204, BC = 104, CD = 195, DA = 85 and BD = 221. Then find AC
(A) 205   (B) 210   (C) 220   (D) 225

23. Find the sum
$$\frac{4}{3\times 7}+\frac{4}{7\times 11}+\frac{4}{11\times 15}+........+\frac{4}{95\times 99}$$

(A) $\frac{31}{9405}$ (B) $\frac{19}{1155}$ (C) $\frac{32}{99}$ (D) $\frac{10}{33}$

24. The value of $\sqrt{5+2\sqrt{6}}-\dfrac{1}{\sqrt{5+2\sqrt{6}}}$ is:

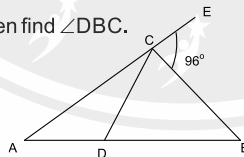(A) $2\sqrt{2}$ (B) $2\sqrt{3}$ (C) $1+\sqrt{5}$ (D) $\sqrt{5}-1$

25. If ax^3+bx^2+x-6 has $x+2$ as a factor and leaves a remainder 4 when divided by (x−2), find the value of $a+b$
(A) 4   (B) 3   (C) 5   (D) 2

26. If $x-\dfrac{1}{x}=2$, then the value of $x^4+\dfrac{1}{x^4}$ is?

(A) 30   (B) 32   (C) 34   (D) 36

27. In figure AD = CD = BC and BCE = 96° then find $\angle$DBC.
(A) 36°
(B) 32°
(C) 64°
(D) 72°

28. If three vertices of parallelogram ABCD are A (-1,0), B (3,1), C(2,2) find its fourth vertex
(A) (-1, 2)   (B) (-2, 1)   (C) (-1, 1)   (D) (-2, -2)

29. If $x+\dfrac{1}{x}=2$ then $x^{10}+\dfrac{1}{x^{10}}=?$
(A) 2^{10} (B) 2   (C) $2^{10}-2$ (D) $2^{10}+\dfrac{1}{2^{10}}$

30. If S is any point on the side QR of a $\triangle$PQR, then
(A) PQ + QR + RP > 2PS   (B) PQ + QR + RP < 2PS   (C) PQ + QR + RP < PS   (D) None of these

31. If $(a-1)^2+(b+2)^2+(c+1)^2=0$, then the value of 2a − 3b + 7c is:
(A) 12   (B) 3   (C) − 11   (D) 1

32. If $x = \sqrt{10} + 3$, then find value of $\dfrac{x^3 + 5x^2 - x}{x^4 + 1}$

(A) $\dfrac{11}{36}$ (B) $\dfrac{11}{38}$ (C) $\dfrac{1}{6}$ (D) $\dfrac{3}{19}$

33. If $2^{2x-1} + 2^{1-2x} = 2$, then the value of x is
    (A) 0.5   (B) −0.5   (C) 1   (D) 0

34. ABC is a right angled triangle, right angled at $\angle B$. If median AD is perpendicular on median BE and AB = $2\sqrt{3}$ cm then length of hypotenuse AC is equal to?
    (A) $3\sqrt{3}$ cm   (B) 6 cm   (C) $6\sqrt{3}$ cm   (D) 9 cm

35. Find the remainder when $(2^{100} + 3^{100} + 4^{100} + 5^{100})$ is divided by 7
    (A) 0   (B) 3   (C) 4   (D) 5

36. The distance between two spots A and B on the same bank of the river is 75 km. Speed of the boat in still water is twice as much as that of the speed of the water current of the river. The boat travels in the river from A to B and returns back to the spot in 16 hour. What is the speed of the boat in still water?
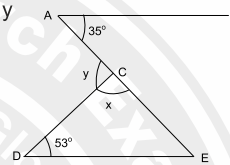   (A) 12.5 kmph   (B) 15 kmph   (C) 16 kmph   (D) 18 kmph

37. If $x = (\sqrt{21} - \sqrt{20})$ and $y = (\sqrt{18} - \sqrt{17})$, then
    (A) $x = y$ (B) $x + y = 0$ (C) $x > y$ (D) $x < y$

38. In the figure shown AB is parallel to DE. The difference between angles x and y

(A) $0°$
(B) $4°$
(C) $10°$
(D) $12°$

39. In a triangle ABC, a point D on AB is such that AD : AB=1 : 4 and DE is parallel to BC with E on AC. Let M and N be the mid points of DE and BC respectively. What is the ratio of the area of the quadrilateral BNMD to that of triangle ABC?
    (A) 1/4   (B) 9/32   (C) 7/32   (D) 15/32

40. A cylinder of radius 6 cm and height h cm is filled with ice cream. The ice cream is then distributed among 10 children in identical cones having hemispherical tops. The radius of the base of the cone is 3 cm and its height is 12 cm. Then the height h of the cylinder must be
    (A) $\dfrac{100}{7}$ cm   (B) 18 cm   (C) 15 cm   (D) $\dfrac{200}{11}$ cm

41. A piece of wire 60 cm long is cut into two parts, one of them being 24 cm long. Each part is then bent to form a square. The ratio of the area of the larger square to the smaller square is
    (A) $\dfrac{11}{3}$ (B) $\dfrac{7}{4}$ (C) $\dfrac{3}{2}$ (D) $\dfrac{9}{4}$

42. Find the remainder when x^{51} is divided by $x^2 - 3x + 2$
    (A) x   (B) $(2^{51} - 2)x + 2 - 2^{51}$ (C) $(2^{51} - 1)x + 2 - 2^{51}$ (D) 0

43. The mean of the following frequency distribution is _____

Class interval	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency	4	6	8	10	12

    (A) 25   (B) 28   (C) 30   (D) 32

44. Two unbiased dice are rolled. What is the probability of getting a sum which is neither 7 nor 11?
    (A) $\dfrac{7}{9}$ (B) $\dfrac{7}{18}$ (C) $\dfrac{2}{9}$ (D) $\dfrac{11}{18}$

45. If set of marbles, of radius 5 cm, is poured into a cube of side 1 m. The maximum number of marbles that can be filled into the box are
    (A) 1000   (B) 2000   (C) 1500   (D) 3000