S I M S®

(SCHOLARS INTEGRAL MATHS & SCIENCE OLYMPIADS)

CLASS IX

SIMO QUESTION PAPER

MAX. MARKS : 100   TIME: 60 MIN.

NAME OF THE STUDENT : ....

HALL TICKET NUMBER : ....

NAME OF THE SCHOOL : ....

INSTRUCTIONS:

✦ **This question paper contains 41 questions.**

✦ **First 32 questions (1 to 32) are single correct answer type. Each question carries 2 marks.**

✦ **Next 9 questions (33 to 41) questions are one or more than one correct answer type. Each question carries 4 marks.**

✦ **No negative marks.**

✦ **You have not allowed to use a calculator or any other electronic devices in the examination hall.**

✦ **Read the instructions given in the answer sheet(OMR sheet) before answering the questions.**

✦ **The answer sheet should be returned to the invigilator before leaving the examination hall (You can retain the question paper with you)**

✦ **Results will be available at : www.simsolympiads.com**

Single Correct Answer Type: **32 × 2 = 64**

1. **A box has 15 balls. 3 balls are yellow, 5 balls are red and the remaining are green. Find the probability that a ball drawn is green.**

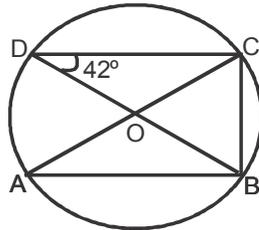   1) $\dfrac{1}{3}$ 2) $\dfrac{7}{15}$ 3) $\dfrac{8}{15}$ 4) $\dfrac{7}{8}$

2. **There are 30 cards which are numbered from 1 to 30. What is the probability of getting a card having prime number if a card selected at random ?**

    1) $\dfrac{1}{3}$ 2) $\dfrac{4}{3}$ 3) $\dfrac{6}{2}$ 4) $\dfrac{5}{3}$

3. $\left(\dfrac{x^l}{x^{-m}}\right)^{l^2+m^2-lm} \times \left(\dfrac{x^m}{x^{-n}}\right)^{m^2+n^2-mn} \times \left(\dfrac{x^n}{x^{-l}}\right)^{n^2+l^2-nl} =$

    1) $x^{2(l^2+m^2+n^2)}$ 2) $x^{2(l^3+m^3+n^3)}$ 3) $x^{(l^3+m^3+n^3)}$ 4) 1

4. **In the given circle, O is a centre and ∠BDC = 42º, the measure of ∠ACB is equal to**

    1) 42º   2) 45º   3) 48º   4) 60º

5. **The weighted arithmetic mean of the first 'n' natural numbers whose weights are equal to the corresponding numbers is**

    1) $\dfrac{1}{2}(n+2)$ 2) $\dfrac{1}{2}(n+1)$ 3) $\dfrac{1}{3}(n+1)$ 4) $\dfrac{1}{3}(2n+1)$

6. The lateral surface area of a hollow cylinder is 4224 cm². It is cut along height and a rectangular sheet of width 32 cm is obtained. The perimeter of rectangular sheet is_____.
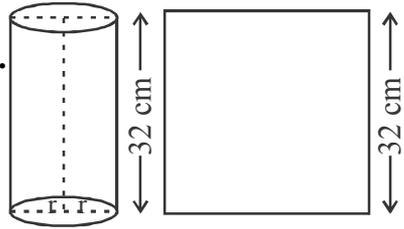
1) 328 cm   2) 142 cm   3) 160 cm   4) 154 cm

7. M men agreed to purchase a gift for ₹C. If 3 men drop out, how much more will each have to contribute towards the purchase of the gift ?

1) $\dfrac{3C}{M^2 - 3M}$ 2) $\dfrac{3C}{M^2 - M}$ 3) $\dfrac{3C}{M^2 + M}$ 4) $\dfrac{3C}{M^2 + 3M}$

8. Given that $u = \sqrt{3} + 1$, $v = \sqrt{3} - 1$. The value of $\dfrac{uv}{u - v}$ is

1) $\dfrac{1}{\sqrt{3}}$ 2) $\sqrt{3}$ 3) $2\sqrt{3}$ 4) 1

9. If $\sqrt{23 + x\sqrt{10}} = \sqrt{18} + \sqrt{5}$, then the value of x is

1) 2   2) 3   3) 5   4) 6

10. The radical form of $\left\{\left[\left(\dfrac{p}{q}\right)^{-\frac{2}{3}}\right]^{\frac{3}{2}}\right\}^{\frac{-1}{7}}$ is

1) $7 \cdot \sqrt{\dfrac{p}{q}}$ 2) $\sqrt[7]{\dfrac{q}{p}}$ 3) $\left(\dfrac{p}{q}\right)^{\frac{1}{7}}$ 4) $\left(\dfrac{q}{p}\right)^{\frac{3}{7}}$

11. The probability that a non-leap year contains exactly 53 Mondays.

1) $\dfrac{6}{7}$ 2) $\dfrac{1}{7}$ 3) $\dfrac{52}{365}$ 4) $\dfrac{53}{365}$

12. If $x = \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{2 + \dots \infty}}}$, then the value of x is

1) $1 + \sqrt{2}$ 2) $1 - \sqrt{2}$ 3) $\sqrt{2}$ 4) $\sqrt{2} - 1$

13. The area of the quadrilateral whose vertices, taken in order, are (–4, –2), (–3, –5), (3, –2) and (2, 3) is

1) 26 sq. units   2) 28 sq. units

3) 30 sq. units   4) 32 sq. units

14. The radius of a circle is 10 cm and the distance of the chord from the centre is 6 cm. Then the length of one of its chords is

1) 12 cm   2) 13 cm   3) 14 cm   4) 16 cm

15. In the given figure, AB and CD are straight lines through the centre O of a circle. If $\angle AOC = 80°$ and $\angle CDE = 40°$, then measure of $\angle DCE$ is
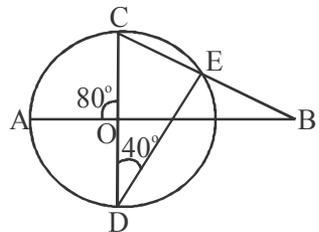
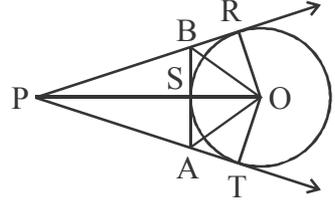1) 50°   2) 55°

3) 45°   4) 65°

16. How much water must be added to 48 *ml* of alcohol to make a solution that contains 25% alcohol ?

1) 24 *ml*   2) 72 *ml*   3) 144 *ml*   4) 196 *ml*

17. **Triangle PAB is formed by three tangents to circle with centre O and $\angle APB = 40°$ then $\angle AOB$ equals**

1) 45°   2) 50°   3) 55°   4) 70°

18. **If** $x = \dfrac{7\sqrt{3}}{\sqrt{10}+\sqrt{3}} - \dfrac{3\sqrt{2}}{\sqrt{15}+3\sqrt{2}} - \dfrac{2\sqrt{5}}{\sqrt{6}+\sqrt{5}}$ **, then the value of $(1+ x^2)$ is**
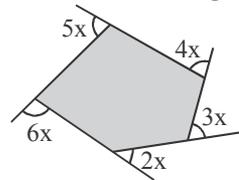
1) 1   2) 2   3) 0   4) 12

19. **The value of x which satisfy the equation** $\sqrt{x} + \sqrt{x - \sqrt{1-x}} = 1$ **is**

1) 0   2) 1   3) $\dfrac{25}{16}$ 4) $\dfrac{16}{25}$

20. **The sum of digits of a two digit numbers is 15. If 9 be added to the number, then the digits are reversed. The number is:**

1) 96   2) 87   3) 78   4) 69

21. **The figure shows a polygon with all its exterior angles. The value of x is :**

1) 9⁰   2) 18⁰

3) 20⁰   4) 36⁰

22. **If** $\dfrac{x^2 - bx}{ax - c} = \dfrac{m-1}{m+1}$ **has roots which are numerically equal but of opposite signs, the value of m must be**

1) $\dfrac{a-b}{a+b}$ 2) $\dfrac{a+b}{a-b}$ 3) $\dfrac{b-a}{b+a}$ 4) $\dfrac{1}{c}$

23. **Suppose six coins are tossed simultaneously. Then the probability of getting at least one tail is _____.**

    1) $\dfrac{71}{72}$ 2) $\dfrac{53}{54}$ 3) $\dfrac{63}{64}$ 4) $\dfrac{1}{12}$

24. **Express the given expression in the standard form.**
    0.0001289 − 0.0000000274×1293+0.0000419032
    1) $1.35375×10^{-2}$ 2) $1.53357×10^{-4}$
    3) $1.35375×10^{4}$ 4) $1.35375×10^{-4}$

25. **The surface area of a sphere is same as the curved surface area of a right circular cylinder whose height and diameter are 12 cm each. The radius of the sphere is**

    1) 4 cm   2) 6 cm   3) 8 cm   4) 10 cm

26. **The slant height of a right circular cone is 10 m and its height is 8 m. Find the area of its curved surface.**

    1) $60\pi r$ m²   2) $30\pi r$ m²   3) $40\pi r$ m²   4) $80\pi r$ m²

27. **A piece of wire 11 cm long is bent into the form of an arc of a circle subtending an angle of 45 degree at its centre. Find the radius of the circle**

    1) 28 cm   2) 14 cm   3) 7 cm   4) 49 cm

28. **The length of an arc of a circle of radius 12 cm is 10π cm. Write the angle measure of this arc.**

    1) 120°   2) 140°   3) 150°   4) 180°

29. **Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5 ?**

    1) $\dfrac{1}{2}$ 2) $\dfrac{2}{5}$ 3) $\dfrac{8}{15}$ 4) $\dfrac{9}{20}$

30. **The area of a rectangular field is 3584msq and it's length is 64m. A boy runs around the field at a rate of 6km/h. How long time with he take to go 5times around it ?**

    1) 16 min   2) 12 min   3) 15 min   4) 18 min

31. **A hawker purchased oranges at the rate of 4 oranges per rupee, but he sells at the rate of 5 oranges per rupee. His loss is.**

1) 25%   2) 80%   3) 20%   4) 40%

32. **A square field and an equilateral triangle park have equal perimeter. If the cost of ploughing the square field at the rate of ₹ 5 per m² is ₹ 720. Find the cost of maintaining the park at the rate of ₹10 per m²?**

1) ₹ 1108   2) ₹ 988   3) ₹ 1088   4) ₹ 110.8

One or more Correct Answer Type: 9 × 4 = 36

33. **The parallel sides of a trapezium are 40 cm and 20 cm. If its non-parallel sides are both equal, each being 26 cm and CL ∥ AD.**
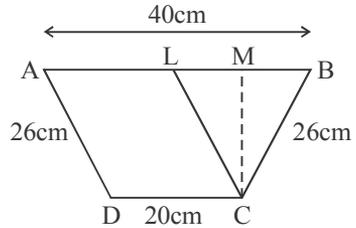
1) The area of the DBCL=240cm²

2) BL= 20 cm

3) The area of the trapezium is 720 cm²

4) CM = 24 cm

34. **If $\dfrac{3+\sqrt{5}}{4-2\sqrt{5}} = p + q\sqrt{5}$, where p and q are rational numbers, find the values of p and q.**

1) $p = \dfrac{2}{11}$ 2) $q = \dfrac{-5}{2}$ 3) $p = \dfrac{-11}{2}$ 4) $q = \dfrac{5}{2}$

35. **From the data: 7, 4, 3, 5, 6, 3, 3, 2, 4, 3, 4, 3, 3, 4, 4, 3, 2, 2, 4, 3, 5, 4, 3, 4, 3, 4, 3, 1, 2, 3.**
Which of the following are correct ?

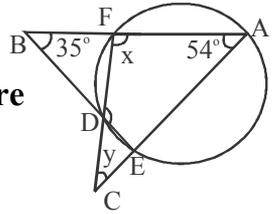1) mean = 3.57   2) mode = 3

3) median = 4   4) mean = 3.47

36. **Which of the following points are collinear ?**

1) P(1, 5), Q(2, 4), R(3, 3)   2) A(3, 4), B(0, –7), C(0, 8)

3) X(6, 0), Y(–10, 0), Z(0, 0) 4) L(–3, 0), M(–3, –4), N(3, 4)

37. **In the figure, AEDF is a cyclic quadrilateral. The values of x and y are**

1) $y = 47°$ 2) $x = 89°$

3) $x = 37°$ 4) $y = 37°$

38. **Two dice are thrown simultaneously. The probability of**

1) getting six as a product is $\dfrac{1}{9}$

2) getting sum is less than or equal to 3 is $\dfrac{1}{12}$

3) getting a doublet is $\dfrac{1}{6}$

4) getting sum of atleast 11 is $\dfrac{1}{18}$

39. **The factors of $x^6 – 7x^3 – 8$ are _____.**

1) $(x^3 – 8)$ 2) $(x + 3)$ 3) $(x^3 + 1)$ 4) $(x – 2)$

40. **If $x = 2 – \sqrt{3}$ then the value of**

1) $x^2 - \dfrac{1}{x^2} = -8\sqrt{3}$ 2) $x + \dfrac{1}{x} = 4$

3) $x^2 + \dfrac{1}{x^2} = 14$ 4) $x^2 - \dfrac{1}{x^2} = 8\sqrt{3}$

41. **A number is selected at random from the numbers 1, 2, 3, 4, . . . , 35. The probability of**

1) a prime number is $\dfrac{2}{7}$ 2) an even number is $\dfrac{17}{35}$

3) multiple of 7 is $\dfrac{1}{7}$ 4) multiple of 3 or 5 is $\dfrac{16}{35}$

*** *ALL THE BEST* ***