S I M S®

(SCHOLARS INTEGRAL MATHS & SCIENCE OLYMPIADS)

CLASS VIII

BIGGEST NATIONAL LEVEL OLYMPIAD (STAGE - II) : 2018-19

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. Seema spends $\frac{3}{4}$ of her pocket money. She spends $\frac{1}{2}$ of it on a book, $\frac{1}{6}$ on a movie and the remaining amount on a dress. What part of her pocket money did she spend on the dress ?

1) $\frac{1}{12}$ 2) $\frac{1}{4}$ 3) $\frac{5}{4}$ 4) $\frac{4}{12}$

2. In an examination, Radha requires 40% of the total marks to pass. If she gets 185 and fails by 15 marks, what was the total marks ?

1) 300 2) 600 3) 500 4) 200

3. From the sum of $2y^2 + 3yz$, $-y^2 - yz - z^2$ and $yz + 2z^2$, subtract the sum of $3y^2 - z^2$ and $-y^2 + yz + z^2$.

1) $z^2 - 2y^2 + yz$ 2) $z^2 - y^2 + yz$

3) $2z^2 - y^2 + 2yz$ 4) $z^2 - y^2 + 2yz$

4. Kiran is 24 years older than Rakesh. 10 years back if Kiran's age was five times the age of Rakesh then their ages are

1) 30 year, 4 years 2) 4 years, 21 years

3) 55 years, 31 years 4) 40 years, 16 years

5. If $4^x + 4^x + 4^x + 4^x + 4^x + 4^x + 4^x + 4^x = \frac{1}{512}$, then the value of $-\frac{3}{x}$ is

1) 0.5 2) –8 3) –0.75 4) –4.25

6. If $\sqrt{12+\sqrt{12+\sqrt{12+\ldots}}} = x$, then the value of x is

1) 3 2) 4 3) 6 4) 12

7. Find the median of the set of numbers: 12, 15, 15, 17, 20, 25, 32, 32.

1) 17 2) 20 3) 18.5 4) 32

8. If 35 shirts of equal size can be stitched from $\frac{49}{2}$ metres of cloth, what is the length of the cloth required for each shirt ?

1) 0.7 m 2) 0.4 m 3) 0.9 m 4) 0.5 m

9. If $4+\frac{1}{m+\frac{1}{n}} = \frac{56}{12}$; m, n ∈ Z, then the value of m+n is __.

1) 2 2) 3 3) 5 4) 8

10. Rehan was asked to solve the fraction $\frac{\frac{5}{3}+\frac{1}{2}\text{ of }\frac{7}{3}}{2+2\frac{2}{3}}$ and his answer as $\frac{1}{7}$. By how much times was his answer wrong?

1) $\frac{7}{10}$ 2) $\frac{29}{3}$ 3) $\frac{31}{4}$ 4) $\frac{17}{4}$

11. Simplified the value of expression $\left(\frac{2}{5}a^4 - 2a + 7\right) - \left(-\frac{3}{10}a^4 + 6a^3\right) - (2a^2 - 7)$ is

1) $\frac{7}{10}a^4 - 6a^3 - 2a^2 - 2a + 14$ 2) $\frac{-5}{10}a^4 + 8a^3 - 2a^2 + 2a$

3) $\frac{-5}{15}a^4 + 6a^3 + 2a^2 - 2a + 7$ 4) $\frac{7}{10}a^4 + 6a^3 - 2a^2 - 2a + 14$

12. If $A = 10w^3+20w^2-55w+60$, $B = -25w^2+15w-10$ and $C= 5w^2-10w+20$, then A+B–C is equal to

1) $10w^3 + 10w^2 + 30w + 30$ 2) $10w^3 + 10w^2 - 30w - 30$

3) $10w^3 - 10w^2 - 30w + 30$ 4) None of the above

13. $\left(\frac{p^{a^4}}{p^{b^4}}\right)^{\frac{1}{a^2+b^2}} \times \left(\frac{p^{b^4}}{p^{c^4}}\right)^{\frac{1}{b^2+c^2}} \times \left(\frac{p^{c^4}}{p^{a^4}}\right)^{\frac{1}{c^2+a^2}}$ **is equal to**

1) 1 2) 2 3) 3 4) 4

14. If $a = (3^{-3}-3^3)$ and $b = (3^3-3^{-3})$, then the value of $\frac{a}{b}-\frac{b}{a}$ is

1) –1 2) 1 3) 0 4) –2

15. $7\frac{1}{2}+\frac{1}{2}\div\frac{1}{2}$ **of** $\frac{1}{4}-\frac{2}{5}\times 2\frac{1}{3}\div 1\frac{7}{8}$ **of** $\left(1\frac{2}{5}-1\frac{1}{3}\right) =$

1) $\frac{1}{42}$ 2) $4\frac{1}{30}$ 3) $\frac{7}{6}$ 4) $\frac{37}{60}$

16. The least number must be added to 2945 to get a perfect square number, then the square root of the resulting number is

1) 45 2) 35 3) 65 4) 55

17. The mean of 25 observations is 36. The mean of first 13 observations is 32 and that of last 13 observations is 39. What is the value of 13th observation?

1) 23 2) 32 3) 20 4) 40

18. Factorised form of $x^2+\frac{1}{x^2}-3$ **is**

1) $\left(x+\frac{1}{x}+1\right)\left(x-\frac{1}{x}-1\right)$ 2) $\left(x-\frac{1}{x}+1\right)\left(x+\frac{1}{x}-1\right)$

3) $\left(x-\frac{1}{x}+1\right)\left(x-\frac{1}{x}-1\right)$ 4) $\left(x-\frac{1}{x}+3\right)\left(x-\frac{1}{x}-1\right)$

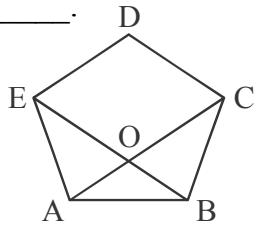
19. Among two supplementary angles, the bigger angle is 40° more than the smaller angle. Find the measure of the smaller angle.

1) 60° 2) 70° 3) 80° 4) 25°

20. Asha can stitch 'x' shirts in $\left(\frac{3}{4}\right)^{th}$ of minute. At this rate, how many shirts can she stitch in $\left(\frac{3}{4}\right)^{th}$ of an hour ?

1) 50x 2) $\frac{9}{16}$x 3) 60x 4) $\frac{16}{9}$x

21. If ABCDE is a regular pentagon and EB and AC intersect at O, then the measure of ∠EOC is _____.



1) 100°
2) 108°
3) 72°
4) 96°

22. What is the sum of the first 20 terms of the series

$\frac{1}{5\times6}+\frac{1}{6\times7}+\frac{1}{7\times8}+$.....?

1) 0.16 2) 1.6 3) 16 4) 0.016

23. If $6\angle A = 10\angle B = 12\angle C = 360^\circ$, where

$\frac{1}{2}\angle A + 2\frac{3}{4}\angle B + 2\frac{2}{5}\angle C + 1\frac{1}{2}\angle x = 360^\circ$, **then $\angle x$ = ____.**

1) 112° 2) 105° 3) 106° 4) 53°

24. The value of $\left(\left(\left((8)^2\right)^{1/2}\right)^2\right)^{1/2}$ is

1) 8 2) 4 3) 16 4) 128

25. $\left[\left(\frac{1}{2}\right)^{-1}+\left(\frac{2}{3}\right)^{2}-\left(\frac{3}{4}\right)^{0}\right]^{-2}$ **is equal to :**

1) $\frac{81}{484}$ 2) $\frac{81}{169}$ 3) $\frac{169}{81}$ 4) $\frac{16}{81}$

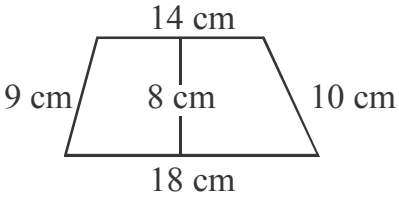
26. Find the area of the trapezoid.

1) 128 cm^2

2) 252 cm^2

3) 256 cm^2

4) 324 cm^2



27. If lengths of 10 terrapins are 63, 63, 75, 67, 69, 52, 50, 63, 56, 52 then their mode is

1) 67 2) 63 3) 50 4) 56

28. If two adjacent angles of a parallelogram are (5x–5)° and (10x + 35)°, then the ratio of these angles is

1) 1 : 3 2) 2 : 3 3) 1 : 4 4) 1 : 2

29. A quadrilateral has three acute angles. If each measures 80^o, then the measure of fourth angle is

1) 150^o 2) 120^o 3) 105^o 4) 140^o

30. If my cube surface area is 150 cm^2, what is the volume ?

1) 125 cm^3 2) 150 cm^3 3) 100 cm^3 4) 175 cm^3

31. If $x^{x\sqrt{x}}=\left(x\sqrt{x}\right)^{x}$**, then the value of x is**

1) 3 2) $\frac{2}{3}$ 3) $\frac{3}{2}$ 4) $\frac{9}{4}$

32. What is one third of half of one third of one tenth of 180?

1) 8 2) 6 3) 4 4) 1

<u>One or more Correct Answer Type:</u> **9 × 4 = 36**

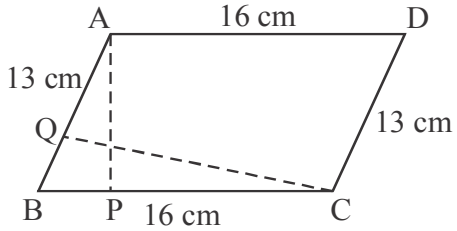
33. The area of a trapezium is 180 cm² and its height is 9 cm. If one of the parallel sides is longer than the other by 6 cm, find the two parallel sides.

1) 11 cm 2) 23 cm 3) 34 cm 4) 17 cm

34. The rational numbers between $\frac{2}{7}$ and $\frac{3}{4}$ are

1) $\frac{97}{104}$ 2) $\frac{71}{112}$ 3) $\frac{29}{56}$ 4) $\frac{5}{56}$

35. The sides of the parallelogram ABCD are 16 cm and 13 cm. The heights AP and CQ are respectively perpendicular to BC and AB. If the area of parallelogram is 1040 square centimeters, then



1) AP = 65 cm 2) AP + PQ = 135 cm

3) CQ = 80 cm 4) Perimeter = 54 cm

36. If $x = 0.\overline{31}$, $y = 0.\overline{29}$, $z = 0.\overline{2}$ and $a = 0.\overline{3}$ then $\frac{x+y}{z+a} = A.\overline{BC}$ then

1) C =1 2) B = 0 3) C = 9 4) A = 1

37. The factors of $12(a+1)^2 - 25(a+1)(b+2) + 12(b+2)^2$ are

1) $(3a - 4b - 5)$ 2) $(3a - 3b + 2)$

3) $(4a - 3b - 2)$ 4) $(3a - 4b + 5)$

38. ABCD is a parallelogram in which $\angle A = 78^o$. Then the measure of

1) $2\angle A - \angle B = 54^o$ 2) $\angle B = 112^o$

3) $\angle DCB - \frac{1}{2}\angle ABC = 27^0$ 4) $\angle A + \angle C = 180^o$

39. The height of 15 students are given in a class are 165, 155, 168, 160, 163, 160, 165, 170, 168, 156,

159, 160, 164, 163, 160.

1) the range of heights is 15 2) the mode is 160

3) the median is 163 4) median 160

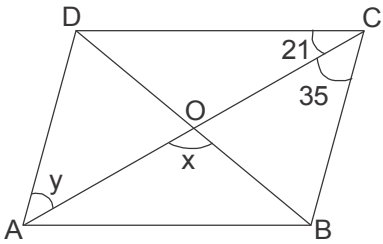
40. In parallelogram ABCD, $\angle AOB = x$, $\angle OCB = 35^o$, $\angle OAD = y^o$, $\angle ADO = 58^o$ and $\angle OCD = 21^o$ then

1) $y = 35^o$

2) $\angle ABC = 114^o$

3) $\angle CAB = 21^o$

4) $x = 93^o$



41. If $x^y = y^x$, where x and y are distinct natural numbers then

1) $x + y = 6$ 2) $xy = 8$ 3) $xy = 16$ 4) $x - y = 7$

*** *ALL THE BEST* ***