CLASS 6

QUESTION PAPER SET A

IMQ

SOF INTERNATIONAL MATHEMATICS OLYMPIAD 2022-23

DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO

Total Questions: 50 | Time: 1 hr.

Guidelines for the Candidate

1. You will get additional ten minutes to fill up information about yourself on the OMR Sheet, before the start of the exam.

2. Write your **Name, School Code, Class, Roll No.** and **Mobile Number** clearly on the **OMR Sheet** and do not forget to sign it. We will share your marks / result and other information related to SOF exams on your mobile number.

3. The Question Paper comprises four sections:

   Logical Reasoning (15 Questions), **Mathematical Reasoning** (20 Questions), **Everyday Mathematics** (10 Questions) and **Achievers Section** (5 Questions)

   Each question in Achievers Section carries 3 marks, whereas all other questions carry one mark each.

4. All questions are compulsory. There is no negative marking. Use of calculator is not permitted.

5. There is only ONE correct answer. Choose only ONE option for an answer.

6. To mark your choice of answers by darkening the circles on the OMR Sheet, use **HB Pencil** or **Blue / Black ball point pen** only. E.g.

   Q.16: Rahul bought 4 kg 90 g of apples, 2 kg 60 g of grapes and 5 kg 300 g of mangoes. The total weight of all the fruits he bought is_____.

   A. 11.450 kg   B. 11.000 kg   C. 11.350 kg   D. 11.250 kg

   As the correct answer is option A, you must darken the circle corresponding to option A on the OMR Sheet.   16. ● Ⓑ Ⓒ Ⓓ
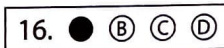
7. Rough work should be done in the blank space provided in the booklet.

8. Return the OMR Sheet to the invigilator at the end of the exam.

9. Please fill in your personal details in the space provided on this page before attempting the paper.

SOF
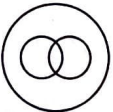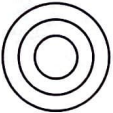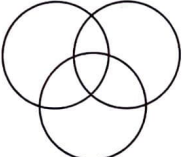
SCIENCE OLYMPIAD FOUNDATION
Inspiring Young Minds Through Knowledge Olympiads

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1. Select the odd one out.

   A. 81
   B. 36
   C. 47
   D. 16

2. Which of the following Venn diagrams best represents the relationship amongst, "Fiction books, Books and Non-fiction books"?

   A.

   B.

   C.

   D.

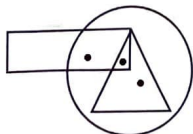3. In a row of 60 students, Amit is at 30th position from the left end. What is his position from the right end?

   A. 32nd
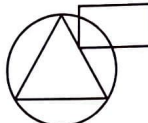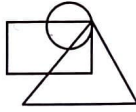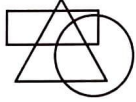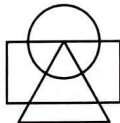   B. 31st
   C. 29th
   D. 33rd

4. Two positions of a dice are shown below. Which number will be on the face opposite to the face having number 4?
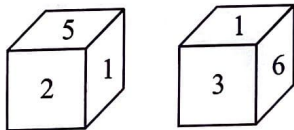
   A. 5
   B. 1
   C. 2
   D. 3
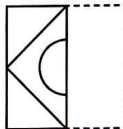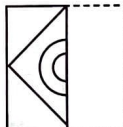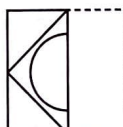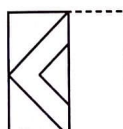
5. Which of the following options satisfies the same conditions of placement of dots as in the given figure?

   A.

   B.

   C.

   D.

6. A square transparent sheet with a pattern and a dotted line on it is given. Select a figure from the options as to how the pattern would appear when the transparent sheet is folded along the dotted line.
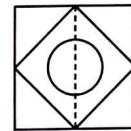
   A.

   B.

   C.

   D.

7. Find the missing number, if same rule is followed in all the three figures.

   A. 30
   B. 36
   C. 40
   D. 45

8. There is a certain relationship between the pair of figures on the either side of ::. Identify the relationship of the left pair and find the missing figure.
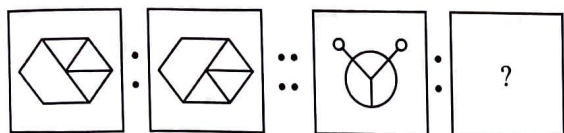
A.

B.

C.

D.

9. In a certain code language, if GREAT is written as JTFCW, then how will SIGHT be written in the same code language?

A. VLJKW
B. TJHIU
C. VKHJW
D. RHHGS

10. Find the minimum number of straight lines required to draw the given figure.

A. 7
B. 8
C. 9
D. 10

11. Select the correct water image of the given combination of letters and numbers.

MaThs2022

A. WɐɈႹᵉƧ022
B. ƧƧ0ƧᵈTɐM
C. ƧƧ0ƧᵈᎻɒꟽ
D. MaTⱯᵉƧ022

12. Select a figure from the options which is exactly embedded in the given figure as one of its parts.

A. △

B. ⋝

C. □

D. △

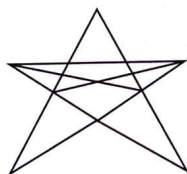13. If 'L' denotes '×', 'M' denotes '÷', 'N' denotes '−' and 'Q' denotes '+', then find the value of 85 M 17 L 4 Q 18 N 5.

A. 25
B. 28
C. 30
D. 33

14. How many such pairs of letters are there in the word CREATOR each of which has same number of letters between them as in the English alphabets?
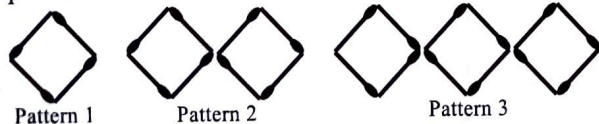
A. Two
B. Three
C. Four
D. None

15. Pointing to a girl in the photograph, Arun said, "She is the granddaughter of the elder brother of my father." How is that girl related to Arun?

A. Sister
B. Cousin
C. Niece
D. Mother

MATHEMATICAL REASONING

16. Find the number of matchsticks that will be used in pattern 32.

Pattern 1   Pattern 2   Pattern 3

A. 145
B. 224
C. 128
D. 212

17. A figure is formed by putting two squares one on the other as shown in the figure. If the length of each side of the two squares is 8 cm, then the perimeter of the figure formed is _____.

    A. 56 cm

    B. 64 cm

    C. 32 cm

    D. 48 cm

18. According to census 2011, the population of India is 1,210,193,422. Which of the following options will represent this number in International System of Numeration?

    A. One hundred twenty one crore one lakh ninety three thousand four hundred twenty two

    B. One billion two hundred ten million one hundred ninety three thousand four hundred twenty two

    C. Twelve billion ten million one hundred ninety three thousand four hundred twenty two

    D. One hundred twenty one crore nineteen lakh three thousand four hundred twenty two

19. What is to be subtracted from 67.74 to get 24.48?

    A. 33.46

    B. 38.46

    C. 33.26

    D. 43.26

20. What is the sum of the greatest and the smallest 5-digit number that can be formed from the digits 0, 7, 5, 2 and 1 (use each digit only once)?

    A. 58,467

    B. 85,467

    C. 76,467

    D. 65,467

21. Which of the following shows the maximum rise in temperature?

    A. 0°C to 10°C

    B. − 4°C to 8°C

    C. −15°C to −8°C

    D. −7°C to 1°C

22. Which of the following pair of numbers are co-prime?

    A. 39, 91

    B. 161, 192

    C. 385, 462

    D. 189, 243

23. What least value should be given to * so that the number 653*47 is divisible by 11?

    A. 9

    B. 6

    C. 7

    D. 1

24. What type of angle will be formed between the hour hand and the minute hand of a clock at 12:40?

    A. Acute angle

    B. Obtuse angle

    C. Right angle

    D. Straight angle

25. Find the number of pairs of parallel lines in the given figure.
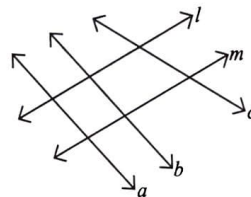
    A. 1

    B. 2

    C. 3

    D. 4

26. Find the value of $2a + 5b$, if $a : 3 = 72 : 27 = 40 : b$.

    A. 20

    B. 75

    C. 91

    D. None of these

27. Which of the following is the simplest form of $\dfrac{161}{299}$?

    A. $\dfrac{7}{13}$

    B. $\dfrac{3}{11}$

    C. $\dfrac{11}{17}$

    D. $\dfrac{17}{23}$

28. Which of the following set of whole numbers will make the given number sentence true?

_____ × _____ + _____ = 49

A. 7, 8, 7
B. 5, 8, 9
C. 7, 8, 10
D. 9, 8, 5

29. Find the value of DXXXIX + CCCLXVII − DCLXXXI.

A. CCCXXV
B. DCLVI
C. DCCXI
D. CCXXV

30. The given bar graph shows the number of wickets taken by a player X from the year 2016 to 2021. Study the graph carefully and answer the given question.
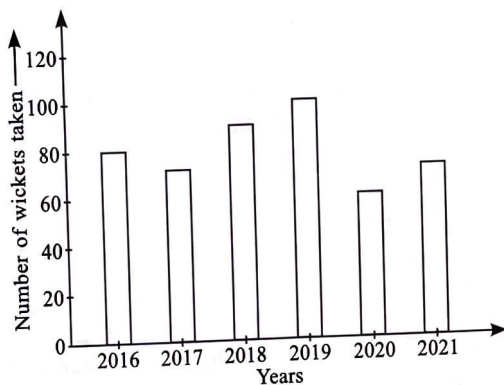

Find the ratio of number of wickets taken by the player in years 2017 and 2021 together to 2016 and 2019 together.

A. 3 : 5
B. 4 : 7
C. 7 : 9
D. 5 : 9

31. How many right angles are formed when hour hand of a clock moves from

(a) 2 to 8   (b) 6 to 9?

	(a)	(b)
A.	1	1
B.	1	2
C.	2	2
D.	2	1

32. If x and y are odd numbers, then which of the following is even?

A. $x + y$
B. $x + y + 1$
C. xy
D. $xy + 2$

33. Which of the following figures has exactly three lines of symmetry?

A.

B.

C.
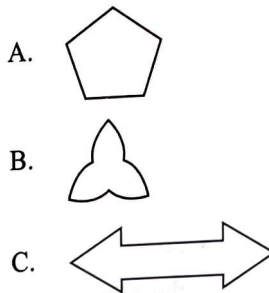
D. None of these

34. What is the difference between the shaded fractions of the given figures?
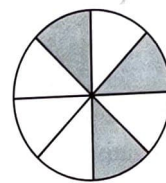
Fig. (i)   Fig. (ii)

A. $\dfrac{1}{24}$

B. $\dfrac{5}{12}$

C. $\dfrac{5}{24}$

D. $\dfrac{1}{12}$

35. Which of the following are not in proportion?

A. 28, 42, 30, 45
B. 15, 21, 25, 35
C. 21, 35, 32, 48
D. 24, 40, 12, 20

EVERYDAY MATHEMATICS

36. Ansh multiplied 160 by 89 instead of multiplying by 79. How much was his answer greater than the correct answer?

A. 1600
B. 16000
C. 10060
D. 10640

37. Rehan bought a notebook of ₹ $14\frac{1}{3}$, a geometry box of ₹ $57\frac{1}{2}$ and a Mathematics book of ₹ $71\frac{2}{3}$. How much money should he pay to the shopkeeper?

A. ₹ $123\frac{1}{2}$

B. ₹ $143\frac{1}{2}$

C. ₹ $123\frac{1}{6}$

D. ₹ $143\frac{1}{6}$

38. Arun wants to donate ₹4200 between two persons X and Y in the ratio of 5:7. Find the amount of money that X and Y will get respectively.

A. ₹ 2450, ₹ 1750
B. ₹ 1750, ₹ 2450
C. ₹ 1950, ₹ 2300
D. ₹ 2300, ₹ 1950

39. Amisha runs 7 km towards South, then from there she came back in the opposite direction and runs 9 km. If South represents negative integer and North represents positive integer, then find her position from initial point.

A. 16 km
B. –2 km
C. –16 km
D. 2 km

40. A rectangular mat is laid on the square floor of side 26 m. The length of the rectangular mat is 18 m and its breadth is two-third of its length. Find the area of floor where mat is not laid.

A. 460 m^2
B. 270 m^2
C. 410 m^2
D. None of these

41. Sushant slept at 10 p.m. and woke up at 7 a.m. How many right angles did hour hand of clock make during this period of time?

A. 2
B. 3
C. 1
D. None of these

42. A container X has 24.25 litres of water and another container Y has 17.75 litres of water. Both containers X and Y together are enough to fill one-fifth of a tank Z. What is the total capacity of the tank Z?

A. 110 L
B. 160 L
C. 210 L
D. 260 L

43. In a university, there are three options for students to choose their streams i.e., Science, Commerce and Arts. In a particular session, 1,54,676 students were enrolled in all streams. If 1,26,136 students were enrolled in Science and Commerce stream together, then find the number of students enrolled in Arts stream in that session.

A. 28,540
B. 45,017
C. 65,017
D. 35,017

44. Three boys steps off together from the same spot. Their steps measures 63 cm, 70 cm and 77 cm respectively. What is the minimum distance each should cover so that all can cover distance in complete steps?

A. 6930 cm
B. 6000 cm
C. 7000 cm
D. 6520 cm

45. To make a specific dress, a cloth of length 4 m 25 cm is needed. Find the total length of cloth required to make 3 such dresses.

A. 12.75 m
B. 13.75 m
C. 16.25 m
D. 19.25 m

ACHIEVERS SECTION

46. Fill in the blanks and select the correct option.

- Area of a digital rectangular board whose length is __P__ m and width is 13 m, is 182 sq. m.

- Sam has to cover the floor of his room by square tiles of side 2 m each. If the length of the floor is 10 m and width is 8 m, then __Q__ tiles will completely cover the floor of the room.

- A square and a rectangle has same perimeter. Length of rectangle is __R__ m, if its breadth is 11 m and side of square is 14.5 m.

	P	Q	R
A.	12	16	15
B.	14	20	18
C.	16	12	15
D.	14	18	14

47. Match the following and select the correct option.

	Column I		Column II
(P)	The difference between the successor and predecessor of 305 is _____.	(i)	−1005
(Q)	Subtract 93 from the sum of −678 and −234 = _____.	(ii)	−16
(R)	The integer which is 8 more than −24 is _____.	(iii)	2

	(P)	(Q)	(R)
A.	(i)	(ii)	(iii)
B.	(iii)	(i)	(ii)
C.	(ii)	(iii)	(i)
D.	(i)	(iii)	(ii)

48. Study the following statements and select the correct option.

Statement-I : The fraction of prime numbers from 1 to 30 is $\frac{1}{3}$.

Statement-II : Ajay spent $2\frac{1}{6}$ hours in reading a story book and spent $\frac{1}{3}$ of an hour in playing game. So, total time spent in all by him is $2\frac{1}{2}$ hours.

A. Both Statement-I and Statement-II are true.
B. Both Statement-I and Statement-II are false.
C. Statement-I is true but Statement-II is false.
D. Statement-I is false but Statement-II is true.

49. Which of the following options is correct?
A. 42 and 49 are co-prime numbers.
B. 376277 is divisible by 3.
C. LCM of 102, 170 and 136 is 2040.
D. None of these

50. Read the given paragraph carefully and answer the following questions.

There is a society of 156 people. In the society, the number of females is $\frac{5}{12}$ of the total number of people and rest are males.

(i) Find the ratio of number of males to the number of females.

(ii) If 49 males are married in the society, then find the ratio of number of unmarried males to the total number of people.

	(i)	(ii)
A.	8:5	8:26
B.	5:4	6:23
C.	7:5	7:26
D.	8:7	5:21

SPACE FOR ROUGH WORK