

EDUHEAL FOUNDATION

EDUHEAL FOUNDATION CONDUCTS 8 OLYMPIADS ANNUALLY REACHING OUT TO 3,500 + SCHOOLS

• 5 LAKH + STUDENTS • 50,000 TEACHERS AND HAVING 500 RESOURCE PERSONS

IN ENGLISH / MATHS / SCIENCE / BIOTECH / COMPUTER / G.K. / ARTS / CRICKET / FINANCE & 300 REGIONAL COORDINATORS.

WEBSITE : WWW.EDUHEALFOUNDATION.ORG • E-MAIL : INFO@EDUHEALFOUNDATION.ORG

ICO INTERNATIONAL CYBER OLYMPIAD	NISO NATIONAL INTERACTIVE SCIENCE OLYMPIAD	NIMO NATIONAL INTERACTIVE MATHS OLYMPIAD	NBTO NATIONAL BIOTECHNOLOGY OLYMPIAD	IEO INTERNATIONAL ENGLISH OLYMPIAD	IGO INTERNATIONAL G.K. OLYMPIAD	BIFO BSE INTERNATIONAL FINANCE OLYMPIAD
---	---	---	--	---	--	--

Level - 1 : All Level-1 successful* participants will get certificate, aptitude report and online subscription, and school toppers will be eligible for school hero medals.

Level - 2 : School toppers* will be selected for level-2-National level - online computer based interactive test held at exam centres all over India. Besides selection for level-3, winner will get merit certificate, medals, educational CDs, laptop, scholarship and other prizes. There is no level 2 in G.K. and Biotech.

Level - 3 : Toppers will qualify# for level 3-International level-where you will compete with students globally. Get selected for EHF's International Olympiad training camp. Only Indian organization giving students exposure to global competitions. Represent India & win laurels. Guidance by top scientists. Prizes ranges from cash (millions of \$), gadgets, foreign trips, publicity, fame, scholarships, Internships, conference participation and more. Level 3 is in Maths, Science & Cyber only.

*# See prospectus/website for details

- You are allowed additional 10 minutes to fill the required details in the **RESPONSE SHEET (OMR)**. **STUDENTS OF CLASS 1 & 2 HAVE TO UNDERLINE** THE CORRECT ANSWER IN THE QUESTION PAPER ITSELF. THEY ARE NOT REQUIRED TO USE THE RESPONSE SHEET (OMR). THEY HAVE TO FILL THEIR NAME, ROLL NUMBER, CLASS, SCHOOL NAME IN THE SPACE PROVIDED IN THE QUESTION PAPER.
- The question paper is made as per syllabus guidelines & pattern given in the information Booklet. The Question Paper for Classes 1 to 6 contains 25 Questions each to be answered in 40 minutes. The Question paper for classes 7 to 12 contains 50 Questions each to be answered in 60 minutes. All questions are compulsory. Further instructions are given in the instruction letter to the teacher.
- Use the response sheet to mark your responses by darkening the required circle. The response sheet has to be returned to the foundation, duly filled in. The student can retain the Question Paper except for classes 1 and 2.

NATIONAL INTERACTIVE MATHS OLYMPIAD

NIMO

11 Class **A1 Paper Code**

LEVEL - 1

Academic Partner — WWW.EDUSYS.IN

EtG BOOKS Creating SUCCESS Stories

A UNIT OF EDUSYS LEARNING MEDIA

AIEEE • IIT • PMT • OLYMPIADS

intel Google Science Fair

INTERNATIONAL SCIENCE AND ENGINEERING FAIR

H THE HARVARD-MIT MATHEMATICS TOURNAMENT

ORACLE ThinkQuest EDUCATION FOUNDATION

MENTAL ABILITY

- If $A = x\%$ of y and $B = y\%$ of x , then which of the following is true?
 - A is smaller than B
 - A is greater than B
 - Relationship between A and B cannot be determined
 - A is equal to B
- If MAPLE is coded as VOKZN then how will CAMEL be coded ?

(1) OVNZF	(2) OUNZX
(3) OVZNV0	(4) OVNZX
- If $P \times Q$ means 'P is the brother of Q', $P \div Q$ means 'P is the son of Q' and $P - Q$ means 'P is the sister of Q'. Then which of the following relations will show that Q is the maternal uncle of P?

(1) $P \div R - Q$	(2) $Q \times R - P$
(3) $Q \div R - P$	(4) $P \times R - Q$
- If the position of Rajan is 15th from one end and 13th from the other end in his class. What is the total number of students in his class?

(1) 28	(2) 24
(3) 27	(4) 29
- In a row of boys, Udai is 23rd from the left and Ashok is 8th from the right. When they interchange their positions Udai become 18th from the right. What will be the position of Ashok from the left?

(1) 15th	(2) 10th
(3) 40th	(4) Data Inadequate
- Ram is Taller than Shyam. Rahim is taller than Ram. Karim is taller than Shokat but Smaller than Shyam. Who is the tallest?

(1) Rahim	(2) Ram
(3) Karim	(4) Shyam
- BTO, DSQ, FRS, HQU

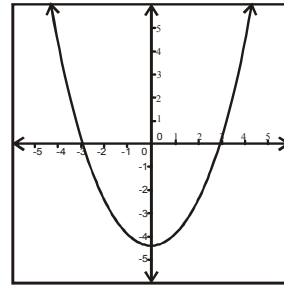
(1) IPX	(2) JPW
(3) CPW	(4) JRW

8. Veena who is the sister-in-law of Ashok, is the daughter-in-law of Kalyani, Dheeraj is the father of Rajan who is the only brother of Ashok. How Kalyani is related to Ashok?
- (1) Mother-in-law (2) Aunt
(3) Wife (4) None of these
9. Pointing to a lady in the photograph Kaushal said, "She is the daughter of the daughter of the only son of my grandfather."
- How is the lady related to Kaushal ?
- (1) Sister (2) Maternal aunt
(3) Niece (4) Cousin
10. If the following series is written in the reverse order and the alternate letter are deleted from it then which letter will divide the new series into two equal parts ?
ABCDEFGHIJKLMNPOQRSTUVWXYZ
- (1) N (2) P
(3) L (4) M

MATHEMATICS

11. Which is an arithmetic sequence ?
- (1) $-2, -1, -\frac{1}{2}, -\frac{1}{4}, \dots$
(2) 2, 5, 9, 14,.....
(3) 3, 10, 17, 24,.....
(4) 100, 50, 12.5, 1.5,.....
12. Assuming $K \neq 0$, which expression is equivalent to the following complex fraction ?
- $$\frac{\frac{2k}{5}}{\frac{6k}{10}}$$
- (1) $\frac{3}{2}$ (2) $\frac{2}{3}$
(3) $\frac{k}{3}$ (4) $\frac{6k^2}{25}$
13. Which is a simplified form of the following expression ?
- $$3\sqrt{2} + 4\sqrt{2} - \sqrt{2}$$
- (1) $6\sqrt{6}$
(2) $6 + \sqrt{2}$
(3) $7 + \sqrt{2}$
(4) $6\sqrt{2}$

14. What is the apparent solution set for the equation associated with the following graph ?



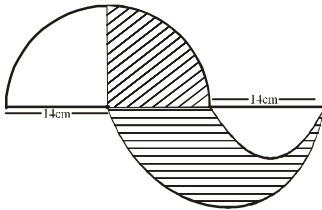
- (1) $\{-3, 3\}$ (2) $\{-3, 0\}$
(3) $\{-9, 0\}$ (4) $\{0, 0\}$
15. Which is an equivalent form of this expression ?
- $$\frac{3}{10xy^4z} \cdot \frac{5yz^4}{3}$$
- (1) $\frac{xz^3}{3y^3}$ (2) $\frac{zy^5z^5}{2}$
(3) $\frac{z^3}{2xy^3}$ (4) $\frac{9}{10xy^5z^5}$
16. Which of the following system of equations has unique solution?
- (1) $3x - 5y - 11 = 0, 6x - 10y - 7 = 0$
(2) $x - 2y - 3 = 0, 5x + 10y + 7 = 0$
(3) $2x - y = 3, 4x - 2y = 1$
(4) $3x - 4y = 1, 8y - 6x = 4$
17. When completely factored, $2x^2 - 16x + 32$ is equivalent to
- (1) $2(x - 2)(x - 8)$
(2) $2(x - 4)(x + 4)$
(3) $2(x - 4)^2$
(4) $2(x + 8)(x + 2)$
18. A line segment has an endpoint at (3, 2). If the mid-point of the line segment is (6, -2), what are the coordinates of the point at the other end of the line segment ?
- (1) (0, 6)
(2) (9, -6)
(3) (5, 0)
(4) (9, 4)

19. The given table shows the number of boxes packed by 24 workers in a day in a particular factory. Some values are missing in the table.

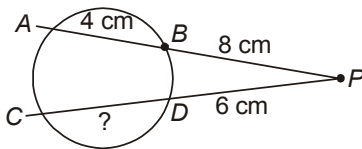
Number of boxes	Number of workers (f_i)	Class mark x_i	$d_i = x_i - a$	$f_i d$
50 - 60	f_1			-60
60 - 70	f_2			
70 - 80	5			0
80 - 90	$2f_1$			
90 - 100	$f_2 - 2$			

What is the mean number of boxes packed by a worker in the factory?

- (1) 76 (2) 68
(3) 64 (4) 58
20. The average marks scored by girls is 68 and that of the boys is 62. The average marks of the whole class is 66. The ratio of the girls and boys in the class is
(1) 2 : 1 (2) 1 : 2
(3) 3 : 4 (4) 4 : 3
21. The standard deviation of the variable values 6, 8, 9, 13, 14 from 10 is
(1) 3.4 (2) 5
(3) 6 (4) None of these
22. The diameter of a solid spherical ball is 7cm. It is melted and converted into 8 small spherical (identical) balls. The radii of smaller sphere is.
(1) 1.75cm (2) 2.7 cm
(3) 3.5 cm (4) 1.25 cm
23. Perimeter of the figure is given by



- (1) 14π (2) 28π
(3) 21π (4) 7π
24. In given diagram shown below, if $PB = 8$ cm, $AB = 4$ cm, $PD = 6$ cm, then $CD = ?$



- (1) $\frac{16}{3}$ cm (2) 10 cm
(3) 6 cm (4) 7 cm

25. If $a_1, a_2, a_3, \dots, a_{15}$ are in AP and $a_1 + a_8 + a_{15} = 15$, then $a_2 + a_3 + a_8 + a_{13} + a_{14}$ is equal to
(1) 25 (2) 35
(3) 10 (4) None of these

26. If first three terms in an AP are $x - 2, x + 1, 2x + 5$, then the value of these terms are-

- (1) -2, 0, 2 (2) -1, 1, 3
(3) -3, 0, 3 (4) 5, -5, -15

27. If one zero of the polynomial $f(x) = (K^2 + 4)x^2 + 13x + 4$ is reciprocal of the other, then K is equal to .

- (1) 2 (2) -2
(3) 1 (4) -1

28. The number in the form of $2m + 3$, where m is a whole number, be always

- (1) An odd number (2) An even number
(3) A perfect square (4) Divisible by 3

29. When a number is divided by 8, its remainder is always

- (1) Greater than 8 (2) Multiple of 2 or 4
(3) Odd positive number (4) Lies between 0 and 8

30. Which of the expression is the same as $\frac{1}{\sqrt[3]{2} - 1}$

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

31. A particular town has certain number of Government High Schools (having Grade 6 to 10). A survey is conducted in these schools to find the relationship between the heights of students and their respective grades. For this purpose, 500 students are selected at random from these schools. The given table shows the result of the survey.

Height (in cm)					
Grade	120-130	130-140	140-150	150-160	160-170
6	22	25	15	27	11
7	12	33	24	22	9
8	15	34	21	17	13
9	21	25	13	29	12
10	9	17	42	15	17

What is the probability that a randomly chosen student is studying in Grade 6 and has a height of less than 120cm.

- (1) 0 (2) 0.34
(3) 0.83 (4) 0.76

32. Two dice are thrown at a time. The probability that the sum of the number shown on the dice is greater than 10, is-

- (1) $\frac{1}{12}$ (2) $\frac{7}{36}$
(3) $\frac{5}{6}$ (4) $\frac{3}{4}$

42. If $a + b + c = 0$, then determinant

$$\begin{vmatrix} a-b-c & 2a & 2a \\ 2b & b-c-a & 2b \\ 2c & 2c & c-a-b \end{vmatrix} \text{ is equal to :}$$

- (1) 0 (2) 1
 (3) 2 (4) 3

43. If $\cos q + \cos 2q + \cos 3q = 0$, the general value of q is:

- (1) $q = 2mp \pm \frac{\pi}{4}$ (2) $q = mp + (-1)^n \frac{2\pi}{3}$
 (3) $q = mp + (-1)^n \frac{\pi}{3}$ (4) $q = 2mp \pm \frac{\pi}{3}$

44. Let $I = \int \frac{e^x}{e^{4x} + e^{2x} + 1} dx$, $J = \int \frac{e^{-x}}{e^{-4x} + e^{-2x} + 1} dx$. Then, for an arbitrary constant C , the value of $J - I$ equals

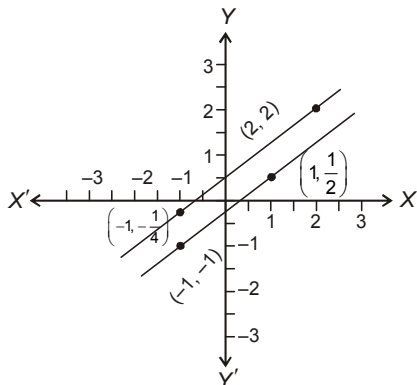
- (1) $\frac{1}{2} \log \left(\frac{e^{4x} - e^{2x} + 1}{e^{4x} + e^{2x} + 1} \right) + C$
 (2) $\frac{1}{2} \log \left(\frac{e^{2x} + e^x + 1}{e^{2x} - e^x + 1} \right) + C$
 (3) $\frac{1}{2} \log \left(\frac{e^{2x} - e^x + 1}{e^{2x} + e^x + 1} \right) + C$
 (4) $\frac{1}{2} \log \left(\frac{e^{4x} + e^{2x} + 1}{e^{4x} - e^{2x} + 1} \right) + C$

45. Which statement is correct regarding sets P , R and T

P = set of even prime numbers
 R = set of all real numbers
 T = set of odd natural numbers

- (1) $P \subseteq R$ (2) $R \subseteq T$
 (3) $T \subseteq P$ (4) None of these

46. The equations representing the given graph is



- (1) $7x + 2y = 11, y - 2x = 3$
 (2) $2x + 7y = 11, 5x + (35y/2) = 25$
 (3) $3x - 7y = 10, 8y - 6x = 4$
 (4) $3x - 4y = 1, 8y - 6x = 4$

47. A body is pulled up an inclined rough plane. Let β be the angle of friction. The required force is least when it makes an angle $k\beta$ with the inclined plane where k is equal to:

- (1) $1/3$ (2) $1/2$
 (3) 1 (4) 2

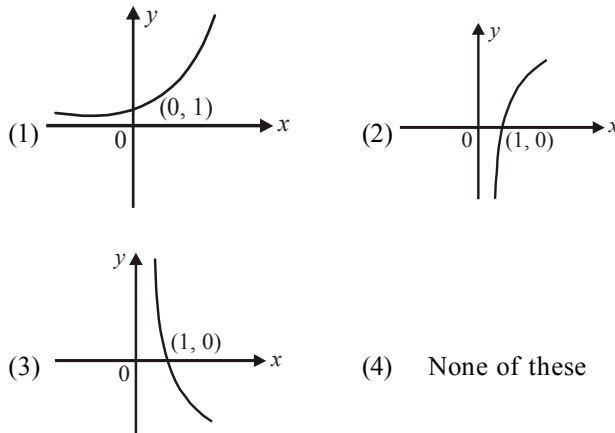
48. Co-variance (x, y) between x and y if $\sum x = 15, \sum y = 40, \sum xy = 110, n = 5$ is

- (1) -2 (2) 22
 (3) 2 (4) none of these

49. A square hole is punched out of a circular lamina of diameter 4 cms the diagonal of the square being a radius of the circle centroid of the remainder from the centre of the circle, is a distance :

- (1) $\frac{1}{2\pi + 1}$ (2) $\frac{1}{2\pi - 1}$
 (3) $\frac{1}{\pi + 1}$ (4) $\frac{1}{\pi - 1}$

50. Graph of logarithmic function $\log_a x$ ($a > 1$) is



😊😊😊
END OF THE EXAM