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

Level - 1 : All Level-1 successful* participants will get certificate, apititude 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 Art, G.K. and Biotech.

Level - 3 : Toppers will qualify# for level 3-International level-where you will compete with students globally. Get selected for EHFs 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

EHF NATIONAL INTERACTIVE MATHS OLYMPIAD

N I M O

11 Class **A1 Paper Code**

L E V E L - 1

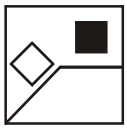
1. You are allowed additional 10 minutes to fill the required details in the **RESPONSE SHEET (OMR). STUDENTS OF CLASS 1 & 2 HAVE TO UNDERLINE** THE CORRECT ANSWER IN THE QUESTION PAPER ITSELF. THEY ARE NOT REQUIRED TO USE THE RESPONSE SHEET (OMR). THEY HAVE TO FILL THEIR NAME, ROLL NUMBER, CLASS, SCHOOL NAME IN THE SPACE PROVIDED IN THE QUESTION PAPER.

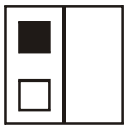
2. The question paper is made as per syllabus guidelines & pattern given in the information Booklet. The Question Paper for Classes 1 to 6 contains 25 Questions each to be answered in 40 minutes. The Question paper for classes 7 to 12 contains 50 Questions each to be answered in 60 minutes. All questions are compulsory. Further instructions are given in the instruction letter to the teacher.

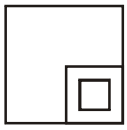
3. Use the response sheet to mark your responses by darkening the required circle. The response sheet has to be returned to the foundation, duly filled in. THE STUDENT CAN RETAIN THE QUESTION PAPER EXCEPT FOR CLASSES 1 AND 2.

MENTAL ABILITY

1. Find the picture that follows logically from the diagrams to the right.

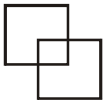
(1) 

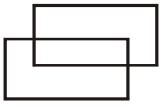
(2) 

(3) 

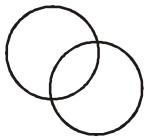
(4) None of these

2. Find the odd one out?

(1) 

(2) 

(3) 

(4) 

3. What comes in the place of (?).

13, 57, 911, 1315, 1719, ___?___.

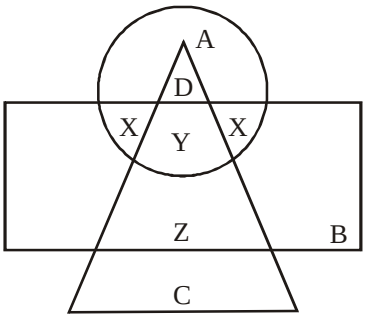
(1) 2123 (2) 1879
(3) 3002 (4) None of these

4. Which number should replace the question mark in the given table?

8	5	21
35	32	12
32	28	31
4	?	28

(1) 3 (2) 2
(3) 6 (4) None of these

Directions (Q. nos. 5-6) : In the following diagram, the circle represents College Professors, the triangle stands for Surgical Specialists, and Medical Specialists are represented by the rectangle.



5. College Professors who are also Surgical Specialists are represented by:
(1) A (2) B
(3) D (4) None of these

6. Surgical Specialists who are also Medical Specialists but not Professors are represented by:
(1) B (2) X
(3) Z (4) None of these

7. Study the following information carefully to answer the given questions:

K, H, R, F, L, N and Q are sitting around a circular table facing the center. H is third to the left of L, who is to the immediate right of K. R is third to the left of N but is not a neighbour of H and L is second to the right of Q.

Who is second to the left of N?
(1) H (2) R
(3) J (4) None of these

8. If the following series is written in the reverse order and the alternate letters are deleted from it then which letter will divide the new series in two equal parts?

ABCDEFGHIJKLMNOPQRSTUVWXYZ.
(1) N (2) P
(3) M (4) None of these

9. If the positions of the first and the sixth digits of the number 2796543018 are interchanged; similarly the positions of the second and the seventh digits are interchanged and so on, which of the following will be the third to the left of seventh digit from the left end?
(1) 0 (2) 1
(3) 7 (4) None of these

10. What will be the difference between the sum of the odd digits and the sum of the even digits in the number 857423?
(1) 0 (2) 1
(3) 2 (4) None of these

MATHEMATICS

11. Which of the following has a non-terminating decimal expansion?
(1) $\frac{24.2}{50}$ (2) $\frac{17}{8}$
(3) $\frac{77}{42}$ (4) None of these

12. The decimal expansion of 23/8 will terminate after how many places of decimals?
(1) 1 (2) 2
(3) 3 (4) None of these

13. HCF of 60 and 723 is
(1) 3 (2) 21
(3) 20 (4) None of these

14. If p, q are two consecutive even natural numbers, then HCF (p,q) is:
(1) 2 (2) p.q
(3) p/q (4) None of these

15. Find the difference: $(4x^2 + 5) – (–2x^2 + 2x–4)$.
(1) $6x^2 + 2x + 4$ (2) $6x^2 – 2x + 9$
(3) $2x^2 – 2x + 1$ (4) None of these

16. The HCF of $6x^2$, $10x^3$ and –8x is:
(1) 2x (2) $–2x^2$
(3) $3x^3$ (4) None of these

17. $16u^5 – 250u^2$ =
(1) $2u^2(8u^3 – 125)$
(2) $2u^2[(2u)^3 – (5)^3]$
(3) $2u^2(2u – 5)(4u^2 + 10u + 25)$
(4) All of these

18. A quadratic polynomial whose product and sum of zeroes are 1/3 and $\sqrt{2}$ respectively is
(1) $3x^2 – x + 3\sqrt{2}$ (2) $3x^2 + x – 3\sqrt{2}$
(3) $3x^2 – 3\sqrt{2}\,x + 1$ (4) None of these

19. The equation of a line which is coincident to $2x + 3y = 6$ is:
(1) $2x + 3y = 12$ (2) $4x + 3y = 6$
(3) $4x + 6y = 12$ (4) None of these

20. When pair of linear equations is consistent, then the lines are always:
(1) Intersecting
(2) Parallel
(3) Coincident
(4) None of these

21. The pair $x = p$ and $y = q$ of the linear equations in which two variables x and y graphically represents two lines which are
(1) Parallel (2) Coincident
(3) Intersecting at (p.q) (4) None of these

22. Two AP's have the same common difference. The difference between their 100th terms is 100, what is the difference between their 1000th terms?

(1) 200 (2) 500
(3) 100 (4) None of these

23. Find the 20th term from the last term of the AP:

3, 8, 13, ..., 253.

(1) 158 (2) 205
(3) 213 (4) None of these

24. Subodh started to work in 1995 at an annual salary of `5000 and received an increment of `200 each year. In which year did his income reached `7000?

(1) 11 (2) 12
(3) 14 (4) None of these

25. Which point satisfies the linear quadratic system $y = x + 3$ and $y = 5 - x^2$?

(1) (–2, 1) (2) (2, 1)
(3) (–1, 2) (4) None of these

26. Three consecutive vertices of a parallelogram are (–2, –1), (1, 0) and (4, 3). Find its fourth vertex.

(1) (1, 2) (2) (–3, 1)
(3) (6, 0) (4) None of these

27. Find the co-ordinate of vertices of a triangle, if the co-ordinates of mid-points of sides of the triangle are: (3, 2), (4, 4) and (1, 3).

(1) (–2, 3) (–1, 3) and (6, 0)
(2) (0, 1) (6, 1) and (2, 5)
(3) (7, 4) (–3, 5) and (0, $2\sqrt{3}$)
(4) None of these

28. Find the co-ordinates of centroid of a triangle whose vertices are:

(–2, 4) (7, –3) and (4, 5)

(1) (3, 0) (2) (–1, 7)
(3) (3, 2) (4) None of these

29. A box contains 3 blue, 2 white and 5 red marbles. If a marble is drawn at random from the box, then what is the probability that the marble will be red or blue?

(1) 1 (2) $\frac{4}{5}$

(3) $\frac{2}{5}$ (4) None of these

30. A dice is thrown once, the probability of getting a number lying between 2 and 6 is:

(1) $\frac{1}{6}$ (2) $\frac{1}{2}$

(3) $\frac{1}{3}$ (4) None of these

Direction: (Q. nos. 31 to 32.)

Cards marked with numbers 1 to 50 are placed in the box and mixed thoroughly. One card is drawn at random from the box.

31. What is the probability of getting a number less than 11?

(1) 1 (2) $\frac{2}{5}$

(3) $\frac{1}{5}$ (4) None of these

32. What is the probability of getting a number greater than 50?

(1) 1 (2) 0

(3) $\frac{1}{5}$ (4) None of these

33. The complex numbers $z = x + iy$ which satisfies equation $\left|\frac{z-5i}{z+5i}\right| = 1$, lies on :

(1) The x-axis.
(2) The straight line where $y = 5$
(3) A circle passing through the origin.
(4) None of these

34. A man walks a distance of 3 units from the origin towards the north-east (N45°E) direction. From there, he walks a distance of 4 units towards the north-west (N45°W) direction to reach a point P. Then the position of P in the Argand plane is

(1) $3e^{i\pi/4} + 4i$ (2) $(3 - 4i)e^{i\pi/4}$
(3) $(3 + 4i)\, e^{i\pi/4}$ (4) None of these

35. In a college of 300 students, every student reads 5 news papers and every news paper is read by 60 students. The number of newspaper is

(1) Atleast 30 (2) Atmost 20
(3) Exactly 25 (4) None of these

36. If the LCM of p, q is $r^2 t^4 s^2$, where r, s, t are prime numbers and p, q are the positive integers, then the number of ordered pair (p, q) is

(1) 252 (2) 254
(3) 225 (4) None of these

37. The product of n positive numbers is unity. Then their sum is:

(1) A positive integer (2) Divisible by n
(3) Never less than n (4) None of these

38. Coefficient of t^{24} in $(1 + t^2)^{12} (1 + t^{12}) (1 + t^{24})$ is

(1) ${}^{12}C_6 + 3$ (2) ${}^{12}C_6 + 1$
(3) ${}^{12}C_6 + 2$ (4) None of these

39. Two events A and B have probabilities 0.25 and 0.50 respectively. The probability that both A and B occur simultaneously is 0.14, then the probability that neither A nor B occurs is:

(1) 0.39 (2) 0.25
(3) 0.11 (4) None of these

40. India plays two matches each with West Indies and Australia. In any match the probabilities of India getting points 0, 1 and 2 are 0.45, 0.05 and 0.50 respectively. Assuming that the outcomes are independent, then the probability of India getting at least 7 points is

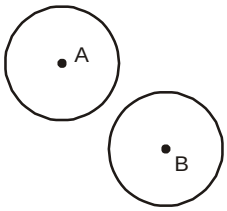
(1) 0.8750 (2) 0.0875
(3) 0.0625 (4) None of these

INTERACTIVE SECTION

41. Line K is drawn so that it is perpendicular to two distinct planes, P and R. What must be true about planes P and R?

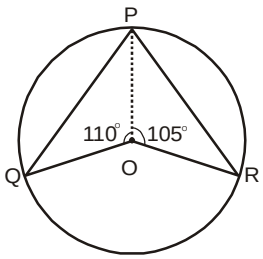
(1) Planes P and R are skew.
(2) Planes P and R are parallel.
(3) Planes P and R are perpendicular.
(4) None of these

42. In the diagram given below, circle A and circle B are shown. What is the total number of lines of tangency that are common to circle A and B?



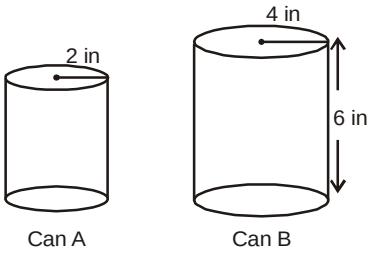
(1) 1 (2) 2
(3) 4 (4) None of these

43. In the given figure, given that $\angle POQ=110°$ and $\angle POR=105°$, then $\angle QPR=$



(1) 145° (2) 135°
(3) 72.5° (4) None of these

44. Harry has two similar cans, as shown below:



The lateral surface area of Can A is-

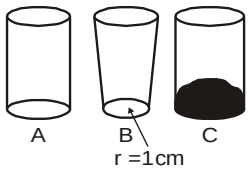
(1) 42.13 in^2 (2) 43.20 in^2
(3) 37.68 in^2 (4) None of these

45. A cone of height 3.25 cm is surrounded by a hemisphere having same base. If the diameter of the base is 3.5 cm then find the curved surface area.

(1) 37.2 cm^2
(2) 38.29 cm^2
(3) 41.21 cm^2
(4) None of these

Directions: for question nos. 46 to 48.

Ramesh, a juice seller has set up his juice shop. He has 3 types of glasses of inner diameter 5 cm to serve customers. The height of each glass is 10 cm. where glass A is cylindrical, B is conical with base radii 1 cm and C is cylindrical, with hemispherical base at the bottom. (use π=3.14)



46. If he serves the customer in glass 'A', then the volume of the glass is-

(1) 186.44 cm^2
(2) 196.25 cm^2
(3) 19.81 cm^2
(4) None of these

47. Which glass has the minimum capacity?

(1) A
(2) B
(3) C
(4) None of these

48. Which mathematical concept is used in the above problem?

(1) Volume of solid figures.
(2) Surface area of solid figures.
(3) Total surface area of cone and plane figures.
(4) None of these

49. Calculate the median income from the following data:

Income (in `)	10	20	30	40
No. of persons	2	4	10	4

(1) 20
(2) 30
(3) 40
(4) None of these

50. Find the mode of the following marks (out of 10) obtained by 20 students.

4, 6, 5, 9, 3, 2, 7, 7, 6, 5, 4, 9, 10, 10, 3, 4, ,7 ,6 ,9 , 9

(1) 4
(2) 7
(3) 9
(4) None of these

END OF THE EXAM