CLASS

11

SAMPLE PAPER

SCIENCE • OLYMPIAD • FOUNDATION

National Cyber Olympiad

The actual test paper has 50 questions. Time allowed : 60 minutes. There are 3 sections, 15 questions in section I, 15 in section II and 20 in section III.

SYLLABUS

Section – I (Mental Ability) : Linear equations in two variables, Polynomials, Rational expressions, Quadratic equations, Arithmetic progressions (A.P), Installments, Income tax, Similar triangles, Circles, Constructions, Mean, Probability, Pictorial representation of data, Coordinate geometry, Sets, Relations and functions, logarithms, Geometrical progressions.

Section – II (Logical and Analytical Reasoning) : Problems based on figures, Find odd numeral out, Series completion, Coding-decoding, Mathematical reasoning, Analytical reasoning, Mirror images, Embedded figures, Direction sense test, Cubes and dice.

Section – III (Computers and IT) : IT basics, Internet, Service available on internet, IT tools, MS- Access, Hyper text markup language, Html fundamentals, IT applications, Database, Website designing.

National Science Olympiad

The actual test paper has 50 questions. Time allowed : 60 minutes. There are 2 sections, 20 questions in section I and 30 in section II.

SYLLABUS

Section – I (Mathematics) : Sets, Relations and functions, Mathematical induction, Logarithms, Complex numbers & quardratic equations, Linear inequations, Differentiation, Sequences and series (A.P. & G.P. Misc.), Trigonometric functions, Cartesian system of rectangular coordinates, Straight line and family of straight lines, Circle, Conic section, Trigonometry, Permutations and combinations, Binomial theorem, Statistics, Mathematical logic, Limits, Probability.

OR

Section – I (Biology) : Diversity in the Living world, Structural Organisation in Plants and Animals, Cell : Structure and Functions, Plant Physiology, Human Physiology.

Section – II (Physics & Chemistry) : *Physics:* Units & measurements, Mechanics, Properties of matter, Heat & thermodynamics, Oscillations, Waves.
Chemistry: Some Basic Concepts of Chemistry, Structure of Atom, Classification of Elements and Periodicity in Properties, Chemical Bonding and Molecular structure, States of Matter, Thermodynamics, Equilibrium, Redox reactions, Hydrogen, The *s*-Block Elements, The *p*-Block Elements (Groups 3 and 4), Organic Chemistry - Some Basic Principles and Techniques, Hydrocarbons, Environmental Chemistry.

International Mathematics Olympiad

The actual test paper has 50 questions. Time allowed : 60 minutes. There are 3 sections, 20 questions in section I, 20 in section II and 10 in section III.
Section I : Logical Reasoning, **Section II :** Mathematical Reasoning & **Section III :** Everyday Mathematics

SYLLABUS

Sets, Relations and functions, Mathematical induction, Logarithms, Complex numbers & quardratic equations, Linear inequations, Differentiation, Sequences and series (A.P. & G.P. Misc.), Trigonometric functions, Cartesian system of rectangular coordinates, Straight line and family of straight lines, Circle, Conic section, Trigonometry, Permutations and combinations, Binomial theorem, Statistics, Mathematical logic, Limits, Probability.

National Cyber Olympiad

MENTAL ABILITY

1. The points z_1, z_2, z_3, on the complex plane are the vertices of an equilateral triangle if and only if :

(A) $\sum (z_1 - z_2)(z_2 - z_3) = 0$ (B) $\sum z_1^2 = 2\sum z_1 z_2$

(C) $\sum z_1^2 = 4\sum z_1 z_2$ (D) $(z_1 + z_2 + z_3)^2 = 3\sum z_1 z_2$

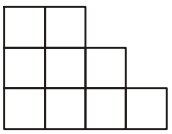
2. $\sum_{r=0}^{n-1} \frac{{}^nC_r}{{}^nC_r + {}^nC_{r+1}} =$

(A) $\frac{n}{2}$ (B) $\frac{n+1}{2}$ (C) $(n+1)\frac{n}{2}$ (D) $\frac{n(n-1)}{2(n+1)}$

3. A student is allowed to select atmost n books from a collection of $(2n + 1)$ books. If the total number of ways in which he can select atleast 1 book is 63, find the value of n.

(A) 6 (B) 3 (C) 5 (D) 4

4. The number of ways in which 5 X's can be placed in the squares of the figure so that no row remains empty is



(A) 97 (B) 98 (C) 100 (D) 126

5. c_1 is a fixed circle and c_2 is a variable circle with fixed radius. The common transverse tangents to c_1 and c_2 are perpendicular to each other. The locus of the centre of variable circle is

(A) Circle (B) Ellipse

(C) Hyperbola (D) Parabola

6. $\frac{x - x_1}{\cos\theta} = \frac{y - y_1}{\sin\theta} = r$, represents

(A) Equation of a straight line, if θ is constant & r is variable

(B) Equation of a circle, if r is constant & θ is a variable

(C) A straight line passing through a fixed point & having a known slope

(D) All of these

7. The value of $\log_2[\cos^2(a+b) + \cos^2(a-b) - \cos 2a \times \cos 2b]$

(A) Depends on α & β both (B) Depends on α but not on β

(C) Depends on β but not on α (D) Is Independent of both α & β

LOGICAL & ANALYTICAL REASONING

8. Which alternative is sufficient for answering the following question based on the information given in the two statements?

QUESTION : Does drinking coffee lead to headache?

STATEMENTS :

I. Overstimulation of pancreas leads to headache?

II. Coffee contains caffeine which when excessive, stimulates pancreas.

(A) Statement I alone is sufficient to answer the question

(B) Statement II alone provides answer to the question

(C) Both statements I and II provide answer to the question

(D) Neither statement I nor statement II provide answer to the question

9. 'P + Q' means 'P is brother of Q'; 'P – Q' means 'P is mother of Q' and 'P × Q' means 'P is sister of Q'. Which of the following means 'M is maternal uncle of R'?

(A) M – R + K (B) M + K – R

(C) M + K × Q (D) There is no such symbol

10. If 1 is coded as Y, 2 is coded as M, 3 as D, 4 as H, 5 as T, 6 as L, 7 as P, 8 as V and 9 as N, which of the following is the coded form of 3972465?
(A) DNPMHLP (B) DNPMHNT (C) DNPMHLT (D) DNPMNLT

11. Which alternative applies to the assumptions of the statement?
STATEMENT : Most people who stop smoking gain weight.
ASSUMPTIONS : **I.** If one stops smoking one will gain weight
II. If one does not stop smoking one will not gain weight.
(A) Only assumption I is implicit (B) Only assumption II is implicit
(C) Both assumptions I and II are implicit (D) Neither assumption I nor II is implicit

12. Which letter will be the sixth to the left of the nineteenth letter from the right end of the following alphabets?
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
(A) N (B) M (C) Y (D) F

13. Bablu ranked sixteenth from the top and twenty-ninth from the bottom among those who passed an examination. Six boys did not participate in the competition and five failed in the examination. How many boys were there in that class?
(A) 44 (B) 50 (C) 55 (D) 40

COMPUTERS & INFORMATION TECHNOLOGY

14. Which of the following is not correct
(A) E-commerce includes all business activities involved in the development, facilitation and implementation of business communications and transaction through electronic media
(B) The Intranet is a restricted version of the Internet within a group of users
(C) The Extranet is a closed online network connecting two or more organisations
(D) None of the above.

15. A debugging tool is a program which
(A) Removes bugs from a user program (B) Removes viruses from the computer
(C) Helps the user find bugs in his/her program (D) Displays errors in a user program

16. Computers can be protected from virus by using
(A) Software (B) Hardware
(C) Software and hardware (D) Cannot be protected at all

17. Y2K problem mainly arose in computer programmes written in
(A) COBOL (B) BASIC (C) FORTRAN (D) PASCAL

18. In the context of information technology, the term security refers to
(A) Confidentiality only (B) Authentication only
(C) Integrity only (D) All of these

19. Which of the following are super computers developed by Indian Scientists?
1. PARAM 2. ANURAG 3. GIST 4. CDAC
Answer choices
(A) 1 & 2 only (B) 1 only (C) All except 3 (D) 1 and 4

20. Which of the following statements about DOS are true?
1. DOS is an acronym for Disk Operating System
2. Loading of DOS into the main memory is known as booting
3. Storage areas on a disk are known as directories. A directory may contain files and/or subdirectories inside it.
4. Wildcards are special characters carrying special meaning. Two MS-DOS wild cards are ? and *
5. A filter is a command that recieves its input from the standard input device and sends its output to standard output device. FIND, MORE and SORT are MS-DOS filters.
(A) 1 and 2 only (B) 1, 2 and 3 (C) All excepts 3 (D) All of these

National Science Olympiad

MATHEMATICS

1. A man moving on a parabolic path finds the angle of elevation of a pole, standing on the focus of path, to be 75°. If the directrix of path is at a distance of 7 meters from him then height of pole is

(A) $(14+7\sqrt{3})$ mtr. (B) $\frac{(2+\sqrt{3})}{7}$ mtr. (C) $(14-7\sqrt{3})$ mtr. (D) $\frac{(2-\sqrt{3})}{7}$ mtr.

2. Three ladies have each brought a child for admission to a school. The head of the school wishes to interview the six people one by one, taking care that no child is interviewed before its mother. The number of ways of doing this is

(A) 6 (B) 36 (C) 72 (D) 90

3. A refrigerator is offered for sale at Rs. 250.00 with successive discounts of 20% and 15%. The sale price of the refrigerator is

(A) 35% less than Rs. 250.00
(B) 65% of Rs. 250.00
(C) 77% of Rs. 250.00
(D) 68% of Rs. 250.00

4. The number of revolutions of a wheel, with fixed center and with an outside diameter of 6 m, required to cause a point on the rim to go one km is

(A) 880 (B) $440/\pi$ (C) $500/3\pi$ (D) $440\ \pi$

OR

BIOLOGY

1. Which of the following statements are true for photosynthetic bacteria (PB) and chemosynthetic bacteria (CB)?

(a) obtain energy from the oxidation of inorganic molecule such as ammonium salt
(b) obtain energy from sunlight
(c) contain photosynthetic pigments
(d) are autotrophs.

(A) PB - b, c, d ; CB - a, d
(B) PB - a, c ; CB - b, d
(C) PB - b, d ; CB - a, b
(D) PB - a, b, c ; CB - b, c, d

2. Anaerobic respiration releases less energy than aerobic respiration because

(A) Energy from oxygen is not made available
(B) Ethyl alcohol is a source of energy
(C) Carbon dioxide is released
(D) Less energy is required by fermenting organisms

3. Three bean seedlings were grown in three culture solutions. After six weeks, *X* had yellow leaves and short internodes, *Y* has red patches on the stem and *Z* had green leaves and stem. It can be deduced that

(A) *X* lacked magnesium, *Y* lacked calcium and *Z* lacked molybdenum
(B) *X* lacked calcium, *Y* lacked nitrogen and *Z* lacks chlorine
(C) *X* lacked calcium, *Y* lacked nitrogen and *Z* had all nutrients
(D) *X* lacked magnesium, *Y* lacked nitrogen and *Z* had all nutrients

4. In the life cycle of a fern the meiosis occurs during the

(A) Formation of spores
(B) Formation of gametes
(C) Germination of a spore
(D) Development of a zygote

PHYSICS & CHEMISTRY

5. Hydrogen sulphide (H_2S) contains 94.11% sulphur, water (H_2O) contains 11.11% hydrogen and sulphur dioxide (SO_2) contains 50% oxygen. Find the ratio of all given elements. After your calculations which law has been verified?

(A) Law of multiple proportion
(B) Law of reciprocal proportion
(C) Law of constant components
(D) Law of combining volumes

6. An astronaut in the space shuttle orbiting the earth performs a trick for a television audience. She inflates a helium filled balloon within the shuttle's controlled atmosphere and lets go of it. To the astonishment of all watching, the balloon

(A) Hovers in place where it was released.
(B) Rises noticeably away from the earth.
(C) Falls noticeably towards the earth.
(D) Drifts backwards opposite to the direction of the shuttle's velocity.

7. A boy throws a table tennis ball of mass 20 g upwards with a velocity of u_0 = 10 m/s at an angle θ_0 with the vertical. The wind imparts a horizontal force of 0.08 N, so that the ball returns to the starting point. Then, the angle θ_0 must be such that, tan θ_0 is
(A) 0.2 (B) 0.4 (C) 2.5 (D) 1.2

8. A weight is attached to the free end of a sonometer wire. It gives resonance at a length 40 cm when it is resonanced with a tuning fork of frequency 512. The weight is then immersed wholly in water, the resonant length is reduced to 30 cm. The relative density in which weight suspended is
(A) 16/9 (B) 16/7 (C) 16/5 (D) 16/3

9. A tank of water has a pinhole leak in the side, 1 m below the water line. If the tank is open to the atmosphere (air pressure = 1.013×10^5 pa), how fast is the water leaving the pinhole ?
(A) $\sqrt{g/4}$ (B) $\sqrt{g/0.1}$ (C) $\sqrt{2g}$ (D) $\sqrt{g}$

10. Find the correct statement from the following.
(A) In planetary motion, total energy remains constant but total angular momentum may vary
(B) Both total energy and total angular momentum are constant in planetary motion and the total energy is negative
(C) Motion of a planet about the Sun and motion of an electron about an attracting nuclear centre are governed by identical relations and the total energy is always positive in both cases
(D) Both total energy and total angular momentum are constant in planetary motion and the total energy is positive

11. One mole of an ideal monatomic gas expands till its temperature doubles under the process V^2T = constant. If the initial temperature is 400 K, the work done by the gas is
(A) 400 R (B) 200 R (C) – 200 R (D) Indeterminate

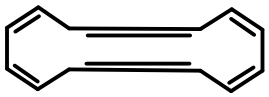
12. A projectile is thrown such that its range should be 1000 metres, but at highest point it breaks into two equal masses, one of whom falls vertically downwards. The other mass will fall at a distance
(A) 1500 metres from launching point (B) 2000 metres from launching point
(C) 3000 metres from launching point (D) 2500 metres from launching point

13. A spirit level containing a bubble in a liquid is jerked forward. Relative to the level and liquid the bubble moves
(A) Backwards, due to its inertia; (B) Backwards, due to a pressure gradient in the liquid;
(C) Forwards, due to its inertia; (D) Forwards, due to a pressure gradient in the liquid;

14. The fourth state of matter is
(A) Super fluid (B) Plasma
(C) Liquid crystals (D) Small particles suspended in the gas

15. The use of ^{12}C scale has suspended the older scale at atomic mass based on ^{16}O isotope, one important advantage of the former being
(A) The atomic masses on ^{12}C scale became whole number
(B) ^{12}C is more abundant in earth crust than ^{16}O
(C) The difference between the physical and chemical atomic masses got narrowed down significantly
(D) ^{12}C is situated midway between metals and non-metals in the periodic table.

16. Electric cookers have a coating that protects them against fire. The coating is made of
(A) Magnesium oxide (B) Heavy lead (C) Chromium oxide (D) Nickel

17.  is
(A) Aromatic compound (B) Annulene
(C) Heterocyclic compound (D) Polycyclic compound

18. Atom may be regarded as comprising of protons, neutrons and electrons. If the mass attributed to a neutron were halved and that attributed to the electron were doubled, the atomic mass of $_6C^{12}$ would
(A) Remain approximately the same (B) Be approximately doubled
(C) Be approximately halved (D) Be reduced approximately by 25%

19. The chemistry of lithium is very much similar to that of magnesium even though they are placed in different groups. The reason is
(A) Both have nearly the same size (B) The ratio of their charge to size is nearly the same
(C) Both have similar electronic configuration (D) Both are found together in nature

20. A bottle of dry ammonia and a bottle of dry hydrogen chloride connected through a long tube are opened simultaneously at both ends, the white ammonium chloride ring first formed will be
(A) At the centre of the tube (B) Near the hydrogen chloride bottle
(C) Near the ammonium bottle (D) Throughout the length of the tube

International Mathematics Olympiad

LOGICAL REASONING

1. Tony and Sunil are participating in a jog-a-thon to raise money for charity. Tony will raise Rs. 20, plus Rs. 2 for each lap he jogs. Sunil will raise Rs. 30, plus Rs.1.50 for each lap he jogs. The total amount of money each will raise can be calculated using the follwing expressions where n represents the number of laps run :

Tony : $20 + 2n$; Sunil : $30 + 1.50n$

After how many laps will they have raised the same amount of money?

(A) 3 (B) 6.5 (C) 14.5 (D) 20

2. There is a proportional relationship between the size of a projected image on a screen and the distance of the screen from the projector.

An image that is projected onto a screen 10 feet away is a rectangle with dimensions of 2 feet by 3 feet. If the screen is moved to a distance of 15 feet from the projector, what will be the dimensions of the larger image projected onto the screen?

(A) 3 feet by 4.5 feet (B) 4 feet by 6 feet
(C) 4.5 feet by 6.75 feet (D) 7 feet by 8 feet

3. A formula for computing a value r is $r = \frac{mx + my}{wz}$, where m, x, y, w and z are positive integers. An increase in which variable would result in a corresponding decrease in r ?

(A) m (B) x (C) y (D) z

4. Matt's mathematics class is playing "Guess My Rule." The teacher writes this table of values on the chalkboard, and the class finds an equation that fits the values in the table. Which of these equations describes the relationship between the values in the table?

(A) $y = 2x - 2$ (B) $y = -2x - 2$ (C) $y = -3x - 2$ (D) $y = 3x - 2$

Table of Values

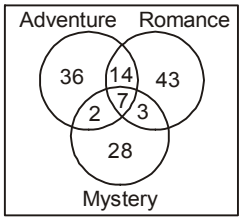
x	y
–3	–11
0	–2
2	4
5	13

5. The Venn diagram below shows the types of novels the literature club members read during their summer break.

Which of the following is NOT supported by the information in the Ven diagram?

(A) 21 members read both an adventure novel and a romance novel
(B) 64 members read only an adventure novel or a mystery novel
(C) 26 members read all three types of novels
(D) 67 members read a romance novel

Literature Club Summer Reading



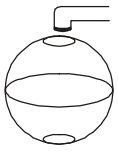
6. A guitar manufacturer uses a computer-controlled machine to make electric guitars. The table below shows the total number of guitars made after 2, 4, 8 and 16 hours. If g represents the total number of guitars made after h hours, which equation represents the pattern shown in the table?

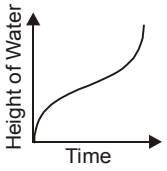
(A) $g = 12h - 6$ (B) $g = 12h$
(C) $g = 3h^2 - 6$ (D) $g = 3h^2 + 6$

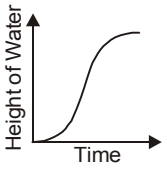
Hours (h)	Total Number of Guitars Made (g)
2	18
4	42
8	90
16	186

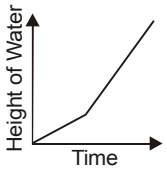
7. Look at this container.

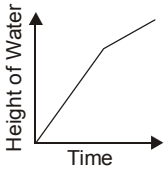
Water flows into this container at a constant rate. Which graph could represent the height of the water in the container over time?



(A) 

(B) 

(C) 

(D) 

MATHEMATICAL REASONING

8. In an examination of 9 papers, a candidate has to pass in more papers than the number of papers in which he fails in order to get the success. The number of ways in which he can fail

(A) 128 (B) 256 (C) 255 (D) 9 × 8!

9. What is the solution to the system of equations shown below?

$$\begin{cases} 2x - y + 3z = 8 \\ x - 6y - z = 0 \\ -6x + 3y - 9z = 24 \end{cases}$$

(A) (0, 4, 4) (B) $\left(1, 4, \frac{10}{3}\right)$ (C) No solution (D) Infinitely many solutions

10. What is the *n*th term in the arithmetic series below?

3 + 7 + 11 + 15 + 19 .....

(A) $4n$ (B) $3 + 4n$ (C) $2n + 1$ (D) $4n - 1$

11. A train is made up of a locomotive, 7 different cars, and a caboose. If the locomotive must be first, and the caboose must be last, how many different ways can the train be ordered?

(A) 5040 (B) 181,440 (C) 362,880 (D) 823,543

12. If $A + B = \frac{\pi}{4}$ then value of $(1 + \tan A)(1 + \tan B)$ equals

(A) 1 (B) 2 (C) –2 (D) –1

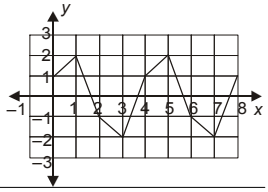
13. What are the coordinates of the image of point $P(-3, -7)$ after a reflection about the line $y = 2$?

(A) (– 3, 9) (B) (– 3, 11) (C) (5, – 7) (D) (7, – 7)

14. Look at this function

As the value of x increases, the y-values form a repeating pattern.

If this pattern continues, what is the y-value when $x = 26$?



(A) – 2 (B) – 1

(C) 1 (D) 2

15. What is the range of the function $f(x) = x^2 + 3$ if the domain is {– 3, 0, 3}?

(A) {3, 12} (B) {– 6, 3, 12}

(C) All real numbers (D) All real numbers greater than or equal to 3

16. The sum of three consecutive odd integers is 21. If x is the least of these odd integers, which equation must be true?

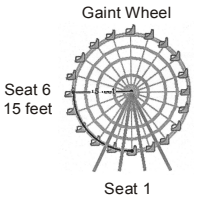
(A) $3x = 21$ (B) $3x + 3 = 21$ (C) $3x + 4 = 21$ (D) $3x + 6 = 21$

17. The harmonic mean of the roots of the equation $\left(2 + \sqrt{3}\right)x^2 - \left(3 + \sqrt{5}\right)x + \left(6 + 2\sqrt{5}\right) = 0$ is

(A) 2 (B) 7 (C) 8 (D) 4

EVERYDAY MATHEMATICS

18. Julie works at the amusement park with the maintenance crew. She needs to replace a string of burned-out lights along the arc shown between seat 1 and seat 6. The arc makes up 1/4 of the Gaint Wheel.



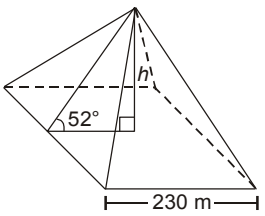
The 20 seats of the wheel are equally spaced, and the supports from the center of the wheel to each seat are 15 feet in length. How long, to the nearest foot, does the string of replacement lights need to be?

(A) 24 feet (B) 30 feet (C) 47 feet (D) 90 feet

19. The typical wingspan of the little blue heron is 4 inches more than half the typical wingspan of the great blue heron. If g represents the typical wingspan of the great blue heron, which expression represents the typical wingspan of the little blue heron?

(A) $4\left(\frac{1}{2}g\right)$ (B) $\frac{1}{2}g + 4$ (C) $2g + 4$ (D) $\frac{1}{2}(g + 4)$

20. This diagram shows the angle of inclination of the triangular faces of the Great Pyramid in Egypt.



When it was built, the length of each side of the square base was 230 meters.

Which equation represents the height, h, of the Great Pyramid when it was built?

(A) $h = 115 \sin 52°$ (B) $h = 115 \tan 52°$

(C) $h = \frac{115}{\sin 52°}$ (D) $h = \frac{115}{\tan 52°}$

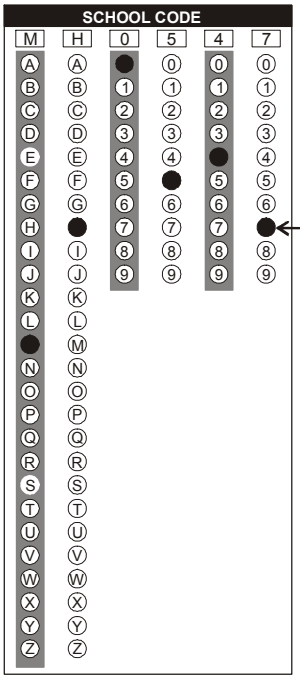
SAMPLE ANSWER SHEET

1. NAME : If your name is SACHIT A IYER, then you should write as follows :

S	A	C	H	I	T		A		I	Y	E	R													

2. FATHER'S NAME : If your father's name is SATISH KUMAR SHARMA, then you should write as follows :

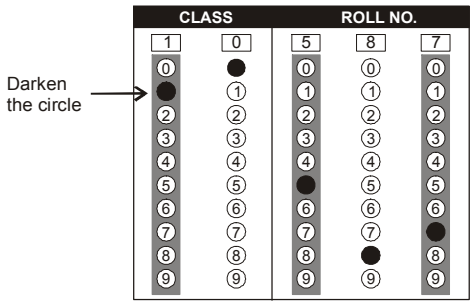
S	A	T	I	S	H		K	U	M	A	R		S	H	A	R	M	A							



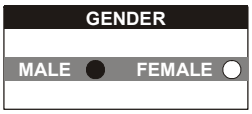
3. SCHOOL CODE
Write your school code i.e. if your school code is MH0547 darken as follows :

4. CLASS
If you are in Class 10, then you should darken as follows :

5. ROLL NO.
If your roll no. is 587, then you should write and darken the circles as follows :



6. GENDER
If you are a boy, then darken **Male** circle



7. If your choice for Answer 1 is C, then you should darken the circle as follows : **1.** Ⓐ Ⓑ ● Ⓓ

Darken the circle

MARK YOUR ANSWERS WITH HB PENCIL/BALL POINT PEN (BLUE/BLACK)

National Cyber Olympiad

1.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	5.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	9.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	13.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	17.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	6.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	10.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	14.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	18.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	7.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	11.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	15.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	19.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	8.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	12.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	16.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	20.	Ⓐ	Ⓑ	Ⓒ	Ⓓ

National Science Olympiad

1.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	5.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	9.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	13.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	17.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	6.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	10.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	14.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	18.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	7.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	11.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	15.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	19.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	8.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	12.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	16.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	20.	Ⓐ	Ⓑ	Ⓒ	Ⓓ

International Mathematics Olympiad

1.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	5.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	9.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	13.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	17.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	6.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	10.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	14.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	18.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	7.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	11.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	15.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	19.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	8.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	12.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	16.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	20.	Ⓐ	Ⓑ	Ⓒ	Ⓓ

ANSWERS

National Cyber Olympiad

1. (D) 2. (A) 3. (B) 4. (B) 5. (A) 6. (D) 7. (D) 8. (C) 9. (B) 10. (C)
11. (D) 12. (A) 13. (C) 14. (D) 15. (C) 16. (C) 17. (A) 18. (D) 19. (A) 20. (D)

National Science Olympiad

MATHEMATICS : 1. (A) 2. (D) 3. (D) 4. (C)
BIOLOGY : 1. (A) 2. (A) 3. (D) 4. (A)
PHYSICS & CHEMISTRY : 5. (B) 6. (B) 7. (B) 8. (B) 9. (C) 10. (B) 11. (C)
12. (A) 13. (D) 14. (B) 15. (C) 16. (A) 17. (B) 18. (D) 19. (B) 20. (B)

International Mathematics Olympiad

1. (D) 2. (A) 3. (D) 4. (D) 5. (C) 6. (A) 7. (A) 8. (B) 9. (C) 10. (D)
11. (A) 12. (B) 13. (B) 14. (B) 15. (A) 16. (D) 17. (D) 18. (A) 19. (B) 20. (B)