

### SAMPLE PAPER 2014-15

**CLASS** 



NATIONAL CYBER OLYMPIAD

The actual test paper has 50 questions. Time allowed: 60 minutes. There are 4 sections: 10 questions in section I, 10 in section II, 25 in section III and 5 in section IV.

### **SYLLABUS**

Section – I (Mental Ability): Number Systems, Polynomials, Coordinate Geometry, Linear Equations in Two Variables, Introduction to Euclid's Geometry, Lines and Angles, Triangles, Quadrilaterals, Areas of Parallelograms and Triangles, Circles, Constructions, Heron's Formula, Surface Areas and Volumes, Statistics, Probability.

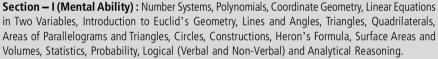
Section - II (Logical and Analytical Reasoning): Problems Based on Figures, Odd One Out, Series Completion, Coding-Decoding, Mathematical Reasoning, Analytical Reasoning, Mirror Images, Embedded Figures, Direction Sense Test, Cubes and Dice.

Section — III (Computers and IT): Algorithms and Flowcharts in Programming, Visual Basic, Animations, HTML, Internet and Viruses, MS-Word, MS-Excel, MS-PowerPoint, Hardware, Software, Input & Output Devices, Memory & Storage Devices, Flash, Networking, Latest Developments in the field of IT.

**Section – IV (Achievers Section ) :** Syllabus as per section III. Questions are based on Windows 7 and MS-Office 2010.

The actual test paper has 50 questions. Time allowed: 60 minutes. There are 3 sections: 15 guestions in section I, 30 in section II and 5 in section III.

### SYLLABUS

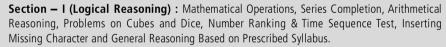


Section - II (Science): Motion, Force and Laws of Motion, Gravitation, Work and Energy, Sound, Matter in Our Surroundings, Is Matter Around Us Pure, Atoms and Molecules, Structure of Atom, Cell - The Fundamental Unit of Life, Tissues, Diversity in Living Organisms, Why Do We Fall Ill, Natural Resources, Improvement in Food Resources.

Section – III (Achievers Section ): Syllabus as per Section II.

The actual test paper has 50 questions. Time allowed: 60 minutes. There are 4 sections: 20 questions in section I, 15 in section II, 10 in section III and 5 in section IV.

### **SYLLABUS**



Section - II (Mathematical Reasoning): Number Systems, Polynomials, Coordinate Geometry, Linear Equations in Two Variables, Introduction to Euclid's Geometry, Lines and Angles, Triangles, Quadrilaterals, Areas of Parallelograms and Triangles, Circles, Constructions, Heron's Formula, Surface Areas and Volumes, Statistics, Probability.

Section – III (Everyday Mathematics): The syllabus of this section will be based on the syllabus of Mathematical Reasoning and Quantitative Aptitude.

Section – IV (Achievers Section): Syllabus as per Section II.



NATIONAL SCIENCE OLYMPIAD



IN ASSOCIATION WITH



The actual test paper has 50 questions. Time allowed: 60 minutes. There are 4 sections.

### **SYLLABUS**

Section – I (Word and Structure Knowledge): Concord, Question forms, Tenses, Conditionals, Modals, Reported speech. Collocations, Phrasal verbs, Idioms, Homonyms and homophones, Words related to social cause, Travel, Workplace, etc.

Section - II (Reading): Search for and retrieve information from various text types like flyers, Classifieds, Dictionaries, etc., Understand information presented in instruction manual format, Message format and others. Acquire broad understanding of and look for specific information in longer texts like editorials, Essays, etc.

Section - III (Spoken and Written Expression): Ability to understand situation-based variations in functions like Giving advice, Stating preferences, Discussing probability, Making an offer, etc. Section – IV (Achievers Section): Syllabus as per Sections I, II and III.





# N C National Cyber Olympiad

		1	

		IVILLIN		
1.		the same time, one is nuch time will they sh (B) 10 days		onds and other to lose 50 seconds 5 minutes? (D) 10 hours
2.	A cylinder and a cone the volumes of the cy	e have the same heigh ylinder and the cone is (B) 3:1	ht and the same radius	us of the base. The ratio between (D) 2:1
3.		PQR is an isosceles tr value of Y ( in degree		n equilateral triangle
	(A) 17°		(B) 27°	
	(C) 37°		(D) 47°	P
4.	diagonal and the area	a of the rhombus.	-	n. Calculate the length of another
	(A) 8 cm, 32 cm <sup>2</sup>	(B) 6 cm, 24 cm <sup>2</sup>	(C) 4 cm, 16 cm <sup>2</sup>	(D) 7 cm, 28 cm <sup>2</sup> .
		LOGICAL AND AN	IALYTICAL REASON	ING
5.	Step 4 : Add 3 Step 5 : If greater that	an 18, subtract 2		otherwise proceed to step 4  ns, what is the end result?  (D) 19.
6.		terminology for earth		y are light, air, earth, sky and water
<u>u.</u>	respectively. If someon	ne is thirsty there, what  (B) Water	would he drink?  (C) Air	(D) Light.
7.	newspapers. The dia	nn diagram. Venn diagram indicato gram is drawn after so 00 how many can be ex (B) 6250	urveying 50 persons.	8 5
8.	a hexagon, and an oddrawing. Chris, Pinto	ctagon. No persons's r	name begins with the es with more than 4 s	s: a circle,a pentagon, a trapezoid, same first letter as that person's ides. Chris drawing has the most hat did Chris draw? (D) Pentagon
		COMPUTERS AND INI	FORMATION TECHN	OLOGY
9.		r() function returns fying a whole number day		per between 0 and 23
10.	(C) The line break ele	nts about HTML is INCC are not case sensitive. Arment is a container ele ring of VLINK attribute i	(B) LINK defines thement.	ne color of the unvisited link.
11.	<ul><li>(B) It is a utility prografiles. It does so by in contiguous me</li><li>(C) It is a utility prografile.</li></ul>	am that facilitates com am that minimizes the t y rearranging the files a	ime taken by the hard and free space on you backing up of the dis	at they occupy less storage space disk optical reader to read up 'split' ir computer so that files are stored

12.	What does OCR stand for? (A) Optical Character Reader (C) Operational Character Reader	<ul><li>(B) Optical Character Recognition</li><li>(D) Only Character Reader.</li></ul>
13.	Match the following  1. Scanner  2. OCR  3. Light pen  4. Plotter  5. Printer  (A) 1A, 2B, 3A, 4B, 5A  (C) 1A, 2A, 3B, 4B, 5B	<ul> <li>A. Input Device</li> <li>B. Output Device</li> <li>(B) 1A, 2A, 3A, 4B, 5B</li> <li>(D) 1A, 2B, 3A, 4B, 5B</li> <li>.</li> </ul>
14.	The smallest unit of memory is  (A) 16 bytes (B) 8 bits	(C) 1 kilobyte (D) 1 GB.
15.	Which of the following symbols will be used to (A) (B)	end the flowchart? (C) (D)



## National Science Olympiad

### **MENTAL ABILITY**

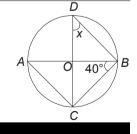
- A person is standing on a staircase. He walks down 4 steps, up 3 steps, down 6 steps, up 2 steps, up 9 steps, and down 2 steps. Where is he standing in relation to the step on which he started?
   (A) 2 steps above
   (B) 1 step above
   (C) The same place
   (D) 1 step below.
- 2. The heights (in cm) of 9 students of a class are as follows:

155, 160, 145, 149, 150, 147, 152, 144, 148

Find the median of this data.

- (A) 145 cm
- (B) 150 cm
- (C) 160 cm
- (D) 149 cm
- 3. A rhombus sheet, whose perimeter is 32 m and whose one diagonal is 10 m long, is painted on both sides at the rate of ₹ 5 per m². Find the approximate cost of painting.
  - (A) ₹625
- (B) ₹325
- (C) ₹ 105
- (D) ₹189
- **4.** Chandra spent 2/5 of her income of January for rent, and 3/4 of the remainder on other expenses. If she put the remaining ₹ 180 in her savings account, how much was her income in January?
  - (A) ₹ 1,000
- (B) ₹ 1,200
- (C) ₹ 1,400
- (D) ₹ 1,600.

- **5.** If O is the centre of the circle, find the value of x:
  - (A) 50°
  - (B) 40°
  - (C) 55°
  - (D) 30°



### SCIENCE

- 6. Elements having the same number of valence electrons in their atoms have
  - (A) Similar atomic sizes

- (B) Similar number of neutrons
- (C) Similar metallic character
- (D) Similar chemical properties.
- 7. Suppose you are pushing a loaded shopping cart. Which of the following is true?
  - (A) If action force always equals reaction force, you cannot move the cart because the cart pushes you backward just as hard as you push forward on the cart
  - (B) You push the cart slightly harder than the cart pushes you backward, so the cart moves forward
  - (C) You push before the cart has time to react, so the cart moves forward
  - (D) You are in contact with the earth through your high-friction shoes, while the cart is free to roll on its round wheels, so the cart moves.

- 8. The speed c of surface waves of wavelength  $\lambda$  travelling in deep water is given by the equation
  - $c = \sqrt{\frac{\lambda g}{2\pi}}$  where g is the acceleration due to gravity. Which one of the following options would give a straight line graph, given that f is the frequency of the waves?
  - (A) f against  $\lambda^{-1}$
- (B) f against  $\lambda$
- (C) f against  $\lambda^2$
- (D)  $f^2$  against  $\lambda^{-1}$ .
- 9. Read the given statements and mark the correct option.
  - Statement 1: Echo is produced only when sound is incident on hard and polished surface.
  - **Statement 2**: Sound energy can be totally reflected by objects with soft and loose texture.
  - (A) Both statement 1 and statement 2 are true and statement 2 is the correct explanation of statement 1.
  - (B) Both statement 1 and statement 2 are true and statement 2 is not the correct explanation of statement 2.
  - (C) Statement 1 is true but statement 2 is false
  - (D) Both statement 1 and statement 2 are false
- 10. What happens to the inertia of an object when its velocity is doubled?
  - (A) The object's inertia becomes  $\sqrt{2}$  times greater
  - (B) The object's inertia becomes 2 times greater
  - (C) The object's inertia becomes 4 times greater
  - (D) The object's inertia is unchanged.
- 11. Filtration as a method of separation can be used for mixtures that are
  - (A) homogeneous and liquid-in-gas mixtures
  - (B) heterogeneous and liquid-in-liquid mixtures
  - (C) homogeneous and solid-in-liquid mixtures
  - (D) heterogeneous and solid-in-liquid mixtures.
- 12. Molten sodium chloride conducts electricity due to the presence of
  - (A) Free molecules of NaCl
- (B) Free electrons

(C) Free Na<sup>+</sup> and Cl<sup>-</sup> ions

- (D) Free atoms of sodium and chlorine.
- **13.** The given figure shows a type of permanent tissue in which cells are living, elongated and irregularly thickened at the corners. Identify it.
  - (A) Parenchyma
  - (B) Collenchyma
  - (C) Sclerenchyma
  - (D) Xylem parenchyma



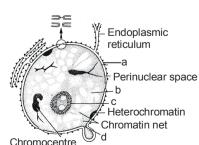
- **14.** Species *X* are chlorophyllous plants which are autotrophic in their mode of nutrition & may be of green, yellow, orange & red colour etc. Species *X* belongs to *Y* which are non-vascular plants and whose plant body is not differentiated into true roots, stems & leaves and have unicellular and nonjacketed sex organs. In the above passage *Y* is
  - (A) Bryophyta
  - (B) Thallophyta
  - (C) Pteridophyta
  - (D) Gymnosperms.
- **15.** Refer the figure and identify from the marked alphabets (a, b, c, d) which is responsible for the following functions.
  - (I) Means of localization of the chromosomes within the cell
  - (II) Selective barrier, allowing certain substances in or out of the nucleus
  - (III) Means of sequestering many of the mRNA processing activities from the cytosol and separating nuclear and cytoplasmic constituents



(B) b

(C) c

(D) a and d.





### International Mathematics Olympiad

### **LOGICAL REASONING**

1. Apples, cherries and grapes are arranged on a platter in the following fashion: opposite sectors contain fruit which is of equal value. To equal the value of two bunches of grapes, how much fruit must be placed in the empty sector?









- 2. If L denotes ÷, M denotes ×, P denotes + and Q denotes –, then which of the following statements is true?
  - (A) 32 P 8 L 16 Q 4 =  $-\frac{3}{2}$
- (B) 6 M 18 Q 26 L 13 P 7 =  $\frac{173}{13}$
- (C) 11 M 34 L 17 Q 8 L 3 =  $\frac{38}{3}$
- (D) 9 P 9 L 9 Q 9 M 9 = -71

3. Find the missing number :







- (A) 937
- (B) 824
- (C) 769
- (D) 678

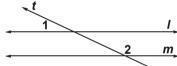
- 4. Complete the pattern.
- 6, 11, 21, 36, 56, (.....)

- (A) 42
- (B) 51
- (C) 81
- (D) 91

### **MATHEMATICAL REASONING**

**5.** In the given diagram, parallel lines l and m are cut by transversal t.

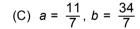
Which statement about angles 1 and 2 must be true?



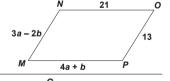
(A) ∠1 ≅ ∠2

- (B)  $\angle 1$  is the complement of  $\angle 2$
- (C)  $\angle 1$  is the supplement of  $\angle 2$
- (D) ∠1 and ∠2 are right angles
- **6.** What values of a and b make quadrilateral MNOP a parallelogram?
  - (A) a = 1, b = 5

(B) a = 5, b = 1



(D)  $a = \frac{34}{7}$ ,  $b = \frac{11}{7}$ 



- 7. For the quadrilateral shown here, what is  $\angle a + \angle c$ ?
  - (A) 53°

(B) 137°

(C) 180°

- (D) 233°
- B 95° 32° D
- **8.** The median of the observations 11, 12, 14, 18, x + 2, x + 4, 30, 32, 35, 41 arranged in ascending order is 24. Find the value of x.
  - (A) 22
- (B) 1
- (C) 21
- (D) 25

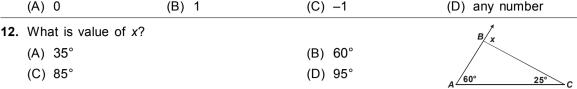
- 9. Simplify:  $\frac{16 \times 2^{n+1} 4 \times 2^n}{16 \times 2^{n+2} 2 \times 2^{n+2}}$ 
  - (A) 1

(B) 6/11

(C) 0

- (D) 1/2
- **10.** Find the remainder when  $p(y) = y^3 + y^2 + 2y + 3$  is divided y + 2.
  - (A) 1
- (B) 4
- (C) -5
- (D) 3

11.	The ordinate of any p	oint on <i>x</i> -axis is		
	(A) 0	(B) 1	(C) -1	(D) any number
12.	What is value of $x$ ?			B/x
	(Δ) 35°		(B) 60°	



### **EVERYDAY MATHEMATICS**

- 13. A right circular cone has radius 5 cm and height 8 cm. What is the lateral surface area of the cone?
  - (A)  $40\pi$  sq cm

(B)  $445\pi$  sq cm

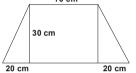
(C)  $5\pi \sqrt{39}$  sq cm

- (D)  $5\pi \sqrt{89}$  sq cm
- 14. A rectangular kitchen table is three times as long as it is wide. If it was 3 m shorter and 3 m wider it would be a square. What are the dimensions of the rectangular table?
  - (A)  $9 \times 3$

(B)  $4 \times 2$ 

(C)  $12 \times 6$ 

- (D)  $16 \times 4$
- 15. Two carpenters decided to design desks for students at the Junior High School. The dimensions of the desk are as shown. How much wood (in cm2) would they need for 30 desks?
  - (A) 2700 cm<sup>2</sup>
  - (B) 80000 cm<sup>2</sup>
  - (C) 21000 cm<sup>2</sup>
  - (D) 81000 cm<sup>2</sup>





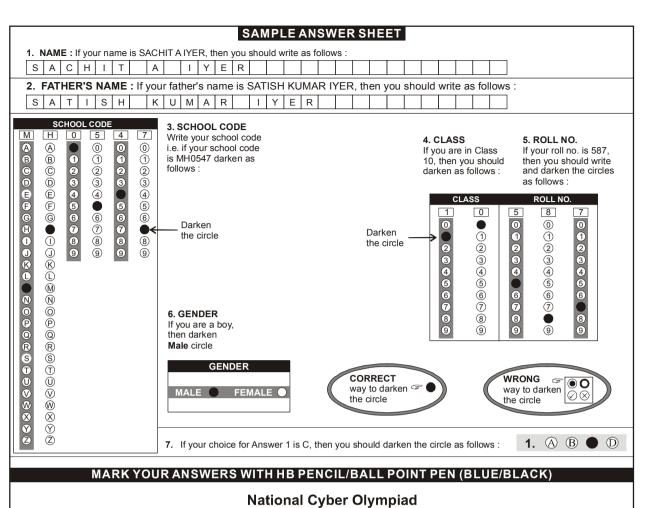
# International English Olympiad

### **WORD AND STRUCTURE KNOWLEDGE**

Direction (Q. No. 1 and 2): Choose one suitable word/phrase for each blank. Make sure that you

cho	ose the correct form	of the word/phrase.			
1.	I am happy you are he	elping me with the assig	ınme	nt. This kind of wor	k is not really my,
	(A) Cup and sauce	(B) Cup of tea	(C)	Cup of coffee	(D) Tea cup
2.	The discussion was by	y no means		It went on for m	nore than four hours!
	(A) Cut and dried		(B)	Chopped and drie	d
	(C) Cut and shredded	d	(D)	Dried and cut	
3.	Choose the correct sp	pelling of the word.			
	(A) Believe	(B) Beleive	(C)	Believ	(D) Beleev
4.	Choose the correct ph	nrase.			
	(A) Down and up	(B) Down and out	(C)	Down and town	(D) Out and down
Dire	ection (Q. No. 5 and 6	s) : Fill in the blanks us	sing	the correct word/p	ohrase.
5.	A class full of very go	od students means		failures for the to	eachers to worry about.
	(A) Lesser	(B) Less	(C)	Fewer	(D) Less than
6.	He seems to know a	lot about you! How long	have	e you	_him?
	(A) Known	(B) Knew	(C)	Been knowing	(D) Know
7.	Spot the error in the	sentence.			
	Becoming a monitor /	often means / to lose fr	iends	s. <u>No error</u>	
	(A)	(B) (C	;)	(D)	

8.	Ravi: I think it's really exciting to go to new pl	aces.	v place
	Teacher: What keep in mind it (A) Do you have to (B) Can you	(C) Have you to	w place. (D) Must you have to
9.	Change the given direct sentence to indirect "Drive carefully!" Ram said to me.	et.	
	(A) Ram said to me drive carefully. (C) Ram told me to drive carefully.	(B) Ram ordered me (D) None of the above	
	•	ADING	
Dire	ection (Q. No. 10 and 11) : Read the passage		wing questions.
10.	The fly was finally hers. It had taken Mini hour hopelessly around inside a pickle jar. Kneeling a layer of butter, wiping the knife clean against savored her victory. She was again in control. The event of trapping the fly is compared with	on a chair, she took a chathe edge of the dish, th	napatti and spread it with a thick ne way her mother used to and
	<ul><li>(A) The taste of chapati and butter</li><li>(C) A celebration by the victor</li></ul>	<ul><li>(B) A war followed by</li><li>(D) The defeat of the</li></ul>	
11.	Which of the following expressions would you (A) On cloud ten (C) On cloud nine	use to describe Mini's (B) Under a cloud (D) Every dark cloud	., -
		RITTEN EXPRESSION	
	Direction (Q. No. 12 and 13): Find one ser	-	-
12.	Teacher to student: I thought you had been doin with your work?  (A) I will let your parents know that you have  (B) I'm afraid, at this rate, I'll have to give you  (C) I'm expecting you to earn a 'D' grade.	failed this year. u a 'D' grade.	
13.	Manasa: Vinu, it's the Maths class now! I for (A) Could you share your book with me today (B) Look here! Give me that book of yours! (C) Can I buy a Maths book? (D) Could I borrow your Maths notebook, please	r.	
14.	Direction (Q. No. 14 and 15): You need to sele Look at the choices given below and select Sentence 1: The blackbucks are mainly graze Sentence 2:  Sentence 3:	t the best option.  ers and prefer to eat gre	
	Sentence 4: Unfortunately most of their habitatoring them to feed on crops.  P. This has restricted their distribution to are Q. They also need to drink water twice a day R. This gives rise to man-animal conflict and (A) PQ (B) QP	eats are being converted eas that are close to cu or so they do not live far hundreds of them are	Itivation. from the source of water. being killed.
15	Sentence 1 : The Pageant's Handbook of First		,
	Sentence 2 :		,
	Sentence 3 :		
	P. All you have to do is write the names of Q. You can get it free, with no contest or prize	14 friends who enjoy re ze to be won.	ading.
	R. And we will rush you the booklet free of c (A) PQ (B) QP	cost. (C) PR	(D) QR
	('') ' \ (D) \ \(\mathref{Q}\)	(5) 110	(5) (3)



#### 1. (A) (B) (C) (D) 2. (A) (B) (C) (D) 3. (A) (B) (C) (D) 4. (A) (B) (C) (D) 5. (A) (B) (C) (D) 6. A B C D 7. A B C D 8. (A) (B) (C) (D) 9. (A) (B) (C) (D) 10. (A) (B) (C) (D) 11. (A) (B) (C) (D) 12. (A) (B) (C) (D) 13. A B C D 14. A B C D 15. (A) (B) (C) (D) **National Science Olympiad** 3. (A) (B) (C) (D) 4. (A) (B) (C) (D) 1. (A) (B) (C) (D) 2. (A) (B) (C) (D) 5. (A) (B) (C) (D) 7. A B C D 8. A B C D 9. A B C D 10. A B C D 6. A B C D 11. A B C D 12. A B C D 13. A B C D 14. (A) (B) (C) (D) 15. A B C D **International Mathematics Olympiad** 1. A B C D 2. A B C D 3. A B C D 4. A B C D 5. A B C D 6. A B C D 7. (A) (B) (C) (D) 8. (A) (B) (C) (D) 9. (A) (B) (C) (D) 10. (A) (B) (C) (D) 12. A B C D 13. A B C D 14. A B C D 15. A B C D 11. A B C D

International English Olympiad

① 3. (A) (B) (C) (D) 4. (A)

8. A B C D

13. (A) (B) (C) (D)

4. A B C D

9. A B C D

14. (A) (B) (C) (D)

5. A B C D

10. A B C D

15. A B C D

### ANSWERS

1. A B C D

6. A B C D

11. (A) (B) (C) (D)

2. A B C D

7. A B C D

12. (A) (B) (C) (D)

National Cyber Olympiad				National Science Olympiad				International Mathematics				International English											
1.	(B)	2.	(B)	3.	(A)	1.	(A)	2.	(D)	3.	(A)			Olyn	npiad					Oly	mpiad	t	
4.	(B)	5.	(B)	6.	(C)	4.	(B)	5.	(A)	6.	(D)	1.	(C)	2.	(D)	3.	(D)	1.	(B)	2.	(A)	3.	(A)
7.	(D)	8.	(B)	9.	(D)	7.	(D)	8.	(D)	9.	(C)	4.	(C)	5.	(C)	6.	(B)	4.	(B)	5.	(C)	6.	(A)
110	). (C)	11.	(B)	12.	(B)	10.	` '	11.	(D)	12.	(C)	7.	(D)	8.	(C)	9.	(D)	7.	(C)	8.	(B)	9.	(C)
113	i. (B)	14.	` '	15.	(C)	13.	(B)	14.	` '		(A)	10.	(C)	11.	(A)	12.	(C)	10.	(C)	11.	(C)	12.	(B)
	(-)		(-)		(-)		(-)		(=)		(, ,)	13.	(D)	14.	(A)	15.	(D)	13.	(A)	14.	(A)	15.	(B)