NCO

SOF NATIONAL CYBER OLYMPIAD

SYLLABUS

Total Questions : 50

Time : 1 hr.

PATTERN & MARKING SCHEME			
Section	(1) Logical Reasoning	(2) Computers & IT	(3) Achievers Section
No. of Questions	10	35	5
Marks per Ques.	1	1	3

Section – 1 : Verbal and Non-Verbal Reasoning.

Section – 2 : Fundamentals of Computers, Internet & Viruses, HTML -(Html, Head, Title, Body (Attributes: Background, Bgcolor, Text, Link, Alink, Vlink), Font (Attributes: Color, Size, Face), Center, BR, HR (Attributes: Size, Width, Align, Noshade, Color), Comment tag(!-->), H1..H6, P, B, I, U, IMG, Html Elements: A, UI and OI (Attributes: Type, Start), LI), Flash CS6, MS-Access, Networking, MS-Word (Exploring File tab, Language and Translate options, Tracking features -Comments, Reviewing Pane, Tracking Changes, Comparing, Combining and Protecting documents, Working with References), MS-PowerPoint (Exploring File tab and Slide Show tab, Comparing, Combining and Protecting presentations), MS-Excel(Exploring File tab, Useful Formulas and Functions - IF,Even, Odd, LCM, GCD, Power, Product, Round, Sqrt, Sum, Min, Max, Average, Count, Upper, Lower And Replace, Cell referencing, Using Defined Names group), Memory & Storage Devices, Basics of Cyber Crimes, Cyber Laws, Operating Systems(Introduction, Features, Types-single user and multiuser), Latest Developments in the field of IT.

Section – 3 : Higher Order Thinking Questions - Syllabus as per Section – 2.

Questions are based on Windows 7 and MS-Office 2010.

LOGICAL REASONING

1. If in a certain code SAND is VDQG and BIRD is ELUG, then what is the code for LOVE?
   (A) PRYG
   (B) ORTG
   (C) NPUH
   (D) ORYH

2. Which of the following venn diagrams best represents the relationship among "tennis fans, cricket players and students"?
   (A)
   (B)
   (C)
   (D)
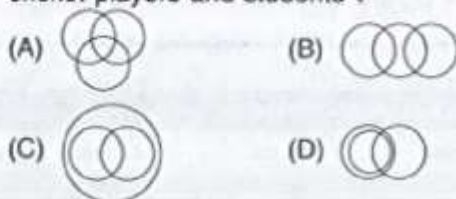
3. A, B, C, D, E and F, not necessarily in that order, are sitting on six chairs regularly placed around a round table. It is observed that A is between D and F, C is opposite to D, D and E are not on neighbouring chairs. The person sitting opposite to B is _____.
   (A) A
   (B) D
   (C) E
   (D) F

4. If the digits in the number 25673948 are arranged in ascending order from left to right, what will be the sum of the digits which are fourth from the right and third from the left in the new arrangement?
   (A) 10
   (B) 9
   (C) 4
   (D) 6

5. Find the missing term in the given series.
   DMP, FLN, HKL, JJJ, __?__
   (A) MII
   (B) LIH
   (C) III
   (D) MIF

COMPUTERS AND INFORMATION TECHNOLOGY

6. Which of the following is NOT available as a category in Control Panel of Windows 7?
   (A) System and Security
   (B) Programs
   (C) Bluetooth settings
   (D) Ease of Access

7. The function of given icon in MS-Word 2010 is _____.
   (A) To add caption to a picture or other image
   (B) To insert an index into the document
   (C) Merge document to PDF files
   (D) Insert Flash video

8. Which of the following is CORRECT in HTML?
   (A) <hr>
   (B) <HR>
   (C) <B> Bold Text </B>
   (D) All of these

9. Computers use the seven digit code called ASCII. What does ASCII stand for?
   (A) American Standard Code for Information Interchange
   (B) Association of Software Coding and Information Institute
   (C) American Standard Computing and Information Institute
   (D) American Scientists Convention for Information Interchange

10. How many sheets are there in MS-Excel 2010 workbook by default?

(A) 2   (B) 3
(C) 4   (D) 5

11. In Flash CS6, ◇ is called ____ tool.

(A) Fill color   (B) Paint bucket
(C) Ink bottle   (D) Lasso

12. In MS-PowerPoint 2010, Format Painter is used to ____.

(A) Copy formatting from one place and apply it to another
(B) Reset the position, size and formatting of the slide

(C) Format text to the left
(D) Increase the indent level

13. Which of the following statements is INCORRECT about memory and storage devices?

(A) Cache memory makes memory transfer rates higher and thus raises the speed of the processor.
(B) A storage device is a hardware component that writes data to and reads data from a storage medium.
(C) ROM loses its data when you turn off the computer.
(D) Hard disks can be divided into one or more logical disks called partitions.

ACHIEVERS SECTION

14. Rearrange the steps given below to insert a motion tween in Flash CS6, first and last steps are given for you.

First : Draw a shape at Frame 1

(i) Drag the playhead to a new frame and reposition your object
(ii) Select the shape and convert it to a symbol
(iii) Go to Insert tab → Motion tween

Last: Press [Ctrl] + [Enter ◄┘] to play the tween.

(A) (ii) → (iii) → (i)   (B) (i) → (iii) → (ii)
(C) (iii) → (i) → (ii)   (D) (iii) → (ii) → (i)

15. Which of the following statements is CORRECT about 'Sneakernet'?

(A) Transferring computer files between computers by physically moving removable media such as CDs, flash drives.
(B) Unauthorised access of information from a wireless device.
(C) The process of converting data in a form so that an unauthorised person can not understand it.
(D) A private computer network in which multiple PCs are connected to each other.

LOGICAL REASONING

1. A dice has numbers 1, 2, 3, 4, 5 and 6 on its faces. Four positions of the dice are as shown below. The number on the face opposite to the face with number 2 is ____.
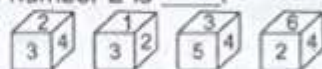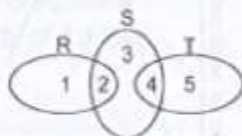
(A) 6   (B) 5
(C) 4   (D) 1

2. Find the number of triangles in the given figure.

(A) 12   (B) 13
(C) 16   (D) 10

3. In the given diagram, R represents businessmen, S represents rich men and T represents honest men. Which number will represent honest rich men ?
   (A) 2
   (B) 3
   (C) 5
   (D) 4

4. There is a set of three figures X, Y and Z, showing a sequence in which a paper is folded and finally cut from a particular section. Select the figure from the options which most closely resembles the unfolded form of fig(Z).
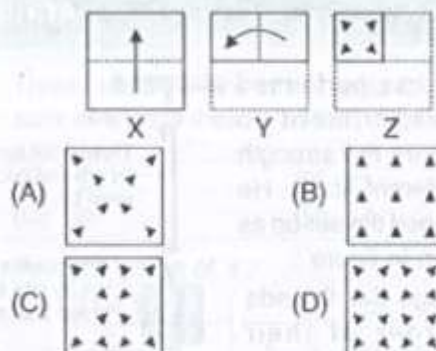
5. If BJP is coded as DMK, how can RSS be written in that code?
   (A) CPI   (B) TVN
   (C) SJP   (D) TDP

SCIENCE

6. Which of these is a likely function of a centriole?
   (A) To hold the fibres of spindle
   (B) To send messages to the nucleus to divide
   (C) To divide the cytoplasm
   (D) To cause the chromosomes to become shorter and thicker

7. Arrange the following planets in increasing order of time required to complete one revolution around Sun.
   (i) Earth   (ii) Uranus
   (iii) Mars   (iv) Jupiter
   (A) (i), (ii), (iii), (iv)   (B) (i), (iii), (iv), (ii)
   (C) (iv), (iii), (ii), (i)   (D) (ii), (iii), (i), (iv)

8. When a glass rod is rubbed with a piece of silk cloth
   (A) Both cloth and the rod acquire positive charge
   (B) Rod becomes positively charged while the cloth has a negative charge
   (C) Rod becomes negatively charged while the cloth has a positive charge
   (D) Both cloth and the rod acquire negative charge.

9. A body immersed in a fluid experiences an upward thrust which depends on
   (A) The weight of the fluid displaced by it
   (B) The volume of the body
   (C) The mass of the body
   (D) All of these.

10. When Cu is exposed to moist air for a long time, which of the following is formed?
   (A) $Cu(OH)_2$ (B) $CuCO_3$
   (C) Both (A) and (B)   (D) Cu_2O

11. Which of the following materials is the best for making garments and jackets that can be used in wet or damp environments?
   (A) Polyester   (B) Wool
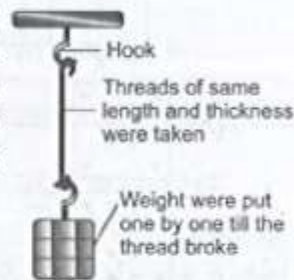   (C) Cotton   (D) None of these.

12. Some basic steps are needed in agricultural practice, which are listed here from 1 to 7. Which of the following options shows the right sequence?
   (1) Preparation of the soil
   (2) Harvesting   (3) Irrigation
   (4) Broadcasting   (5) Tilling
   (6) Weeding   (7) Manuring
   (A) 1, 5, 4, 7, 3, 6, 2   (B) 1, 3, 5, 6, 4, 2, 7
   (C) 1, 3, 5, 2, 4, 6, 7   (D) 1, 5, 6, 2, 4, 7, 3

13. Run-off pollution of a particular river resulted from overuse of chemical fertilizers by a nearby farm. Which of the following graphs correctly shows the resulting changes in levels of oxygen and bacteria in this river?
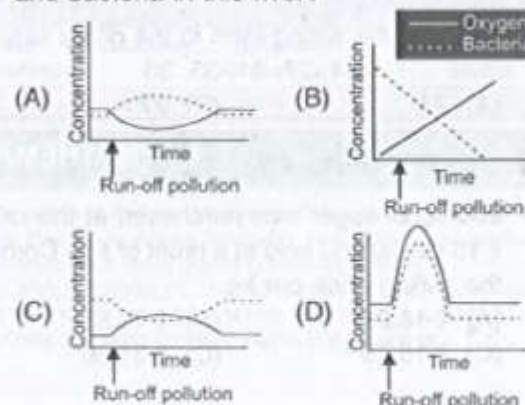
14. Anuj has performed an experiment to compare the strength of different fibres. He arranged the set-up as shown in figure :

Hook
Threads of same length and thickness were taken
Weight were put one by one till the thread broke

Arrange the threads in order of their increasing strength.

(A) Nylon < Silk < Cotton
(B) Silk < Cotton < Nylon
(C) Cotton < Nylon < Silk
(D) Cotton < Silk < Nylon

15. Swati was studying growth of yeast under different conditions of environment. She plotted two graphs but forgot to label the X axes of the graphs. Analyse the given graphs and select the correct option.
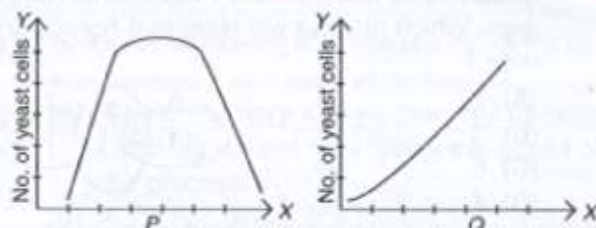
(A) The environmental factor studied in graph P can be pH and in graph Q can be temperature.
(B) The environmental factor studied in graph P can be temperature and in graph Q can be sugar concentration in medium.
(C) The environmental factor studied in graph P can be temperature and in graph Q can be pH.
(D) The environmental factor studied in the graph P can be sugar concentration in medium and in graph Q can be pH.

I M O

SOF INTERNATIONAL MATHEMATICS OLYMPIAD

Total Questions : 50   Time : 1 hr.
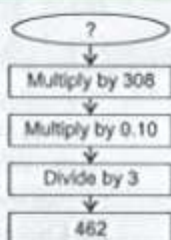
	PATTERN & MARKING SCHEME			
Section	(1) Logical Reasoning	(2) Mathematical Reasoning	(3) Everyday Mathematics	(4) Achievers Section
No. of Questions	15	20	10	5
Marks per Ques.	1	1	1	3

SYLLABUS

Section – 1 : Verbal and Non-Verbal Reasoning.

Section – 2 : Rational Numbers, Squares and Square Roots, Cubes and Cube Roots, Exponents and Powers, Comparing Quantities, Algebraic Expressions and Identities, Linear Equations in One Variable, Understanding Quadrilaterals, Constructions, Mensuration, Visualising Solid Shapes, Data Handling, Direct and Inverse Variations, Factorisation, Introduction to Graphs, Playing with Numbers.

Section – 3 : The Syllabus of this section will be based on the syllabus of Mathematical Reasoning.

Section – 4 : Higher Order Thinking Questions - Syllabus as per Section – 2.

LOGICAL REASONING

1. What is the number you started with?

   ?
   ↓
   Multiply by 308
   ↓
   Multiply by 0.10
   ↓
   Divide by 3
   ↓
   462

   (A) 5
   (B) 45
   (C) 56
   (D) 25

2. Find out the wrong term in the given series.

   24, 27, 31, 33, 36

   (A) 24
   (B) 27

   (C) 31
   (D) 33

3. Rohit is 40 m South-West of Aarav. Ansh is 40 m South-East of Aarav. Then Ansh is in which direction of Rohit?

   (A) East
   (B) West
   (C) North-east
   (D) South

4. Count the number of cubes in the given figure.
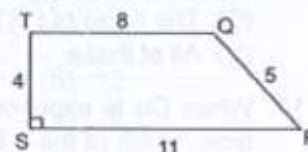
   (A) 14
   (B) 15
   (C) 12
   (D) 20

MATHEMATICAL REASONING

5. 200 kg of sugar was purchased at the rate of ₹ 15 per kg and sold at a profit of 5%. Compute the selling price per kg.

   (A) ₹ 18.25
   (B) ₹ 13.85
   (C) ₹ 15.75
   (D) ₹ 31.50

6. What is the area of trapezoid QRST in square units?

   (A) 22
   (B) 27
   (C) 38
   (D) 48

   T   8   Q
   4   5
   S   11   R

7. Which property is used in the equation given below?
$$12(x + 4) = 12x + 48$$
   (A) Associative Property of Addition
   (B) Commutative Property of Addition
   (C) Distributive Property
   (D) Reflexive Property

8. Simplify : $\dfrac{25 \times a^{-4}}{5^{-3} \times 10 \times a^{-8}}$
   (A) $625a^{-4}$
   (B) $\dfrac{625}{2} a^4$
   (C) $\dfrac{625}{4} a^4$
   (D) $25a^8$

9. Three numbers are in the ratio 2 : 3 : 4. The sum of their cubes is 33957. Find the largest number.
   (A) 28
   (B) 21
   (C) 32
   (D) 14

10. Find the value of x :
$$\dfrac{9x+7}{2} \div \left| x - \left(\dfrac{x-2}{7} \right) \right| = 36$$
   (A) 9
   (B) 18
   (C) 5
   (D) 4

EVERYDAY MATHEMATICS

11. Mohit is thinking of two numbers. Their greatest common factor is 6. Their least common multiple is 36. One of the numbers is 12. What is the other number?
   (A) 18
   (B) 16
   (C) 6
   (D) 24

12. Ramu put a square fence around his vegetable garden to keep the deer away from eating his corn. One side was 10 m in length. If the posts were placed 2 m apart, how many posts did he use?
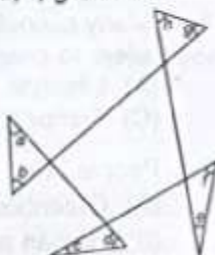   (A) 16
   (B) 20
   (C) 10
   (D) 15

13. Find the number of coins, each of which are 1.5 cm in diameter and 0.2 cm thick, required to form a right circular cylinder of height 10 cm and diameter 4.5 cm.
   (A) 450
   (B) 250
   (C) 350
   (D) 400

ACHIEVERS SECTION

14. Find the sum of a, b, c, d, e, f, g and h.
   (A) 720°
   (B) 360°
   (C) 540°
   (D) 180°

15. Study the statements and choose the correct option.

Statement - 1 : The square root of certain decimals are obtained by first changing the decimals into fractions with perfect squares as their numerators and denominators.

Statement - 2 : $(26.1)^2$ lies between 400 and 900.
   (A) Statement-1 is true and statement-2 is false.
   (B) Statement-1 is false and statement-2 is true.
   (C) Both statements 1 and 2 are false.
   (D) Both statements 1 and 2 are true.

WORD AND STRUCTURE KNOWLEDGE

1. Choose the odd pair.
- (A) Annoy : Irritate
- (B) Comprehend : Understand
- (C) Spectator : Onlooker
- (D) Reserve : Supply

2. The thief walked away with the diamond crown on display. No one stopped him because he was _____ the director of the museum.
- (A) Contacting
- (B) Impersonating
- (C) Implanting
- (D) Contradicting

3. The transmission of the President's speech remained ____ interrupted.
- (A) Mis
- (B) Dis
- (C) Un
- (D) Non

Directions (Q. No. 4 and 5) : Find the incorrect part of the given sentences.

4. The papers are increasing / full of stories
  (A) (B)
of mindless violence. / No error.
  (C) (D)

5. The Taj Residency / is not as expensive than /
  (A) (B)
the Four Seasons Hotel. / No error.
  (C) (D)

6. Maya and Anand _____ for five years.
- (A) Has been married
- (B) Have been married
- (C) Are married
- (D) Is married

READING

Direction (Q. No. 7 to 9) : Read the following passage and answer the questions that follow.

The greatest threat to life on Earth today comes from global warming. This is caused due to multiple factors including human activity. It happens when greenhouse gases (carbon dioxide, water vapour, nitrous oxide, and methane) trap heat and light from the sun in the earth's atmosphere, which increases the overall temperature on Earth. This impacts people, animals, and plants. Many who cannot take the change, die. Global warming is affecting many parts of the world, particularly sea coasts. People living on islands and in coastal areas are therefore at risk as the polar ice caps and sea levels rise.

7. According to the passage, select the statement that is false.

- (A) Life on Earth is threatened only by global warming.
- (B) Global warming threatens human beings who live on islands.
- (C) When the overall temperature on Earth rises the sea level will also increase.
- (D) Creatures which cannot adapt to higher temperatures will become extinct.

8. "Many cannot take the change." Here "change" refers to changes in
- (A) Lifestyle
- (B) Food habits
- (C) Temperature
- (D) Health issues

9. People living in coastal areas are affected by
- (A) Greenhouse gases
- (B) Human actions
- (C) Rise in sea levels
- (D) Rise in temperature

SPOKEN AND WRITTEN EXPRESSION

Direction (Q. No. 10 and 11) : Sentences 1 and 3 are given. Sentence 2 is missing. Find the right sentence for sentence 2.

10. Sona : Hema, I notice your tennis serve is much better these days.

Hema: _____

Sona: Your efforts have not been wasted. There is a remarkable improvement in your game.
- (A) Yes, I think I've finally mastered the technique, though it took months of practice.
- (B) Serving well is an art that can be mastered.
- (C) I saw a doctor because I was suffering from tennis elbow.
- (D) In tennis one has to focus on one's serving action.

11. Mala : I was looking for a birthday present for my nephew but I didn't have much luck. Do you have any bright ideas?

Juhi : _____

Mala : I did think about it, but I felt I should take some trouble and choose something useful.

(A) Some music, maybe?

(B) One need not buy a present for everyone.

(C) You could just give him some money.

(D) Buying a present is something that only the young enjoy.

(E) Students and the youth like to keep abreast of technology.

(F) Who would have imagined a world of cell phones and ipods?

(A) DF　　　　　　　　　(B) ED

(C) EF　　　　　　　　　(D) FD

Direction (Q.No. 12 and 13) : Sentences 1 and 4 are given. Sentence 2 and 3 are missing. Select two sentences that will complete the paragraph.

12. **Sentence 1 :** Today's world is full of gizmos and gadgets unimaginable to people thirty years ago.

    Sentence 2 : _____

    Sentence 3 : _____

    Sentence 4 : However, keeping abreast of technology seems a difficult job by itself considering the pace at which new gadgets appear on the market.

    (D) The markets cater to this section and keep bringing out products that cater to their taste.

13. **Sentence 1 :** Disposal of household waste is a daunting task for local authorities.

    Sentence 2 : _____

    Sentence 3 : _____

    Sentence 4 : One way to reduce waste therefore is to segregate degradable and non biodegradable waste at its source.

    (D) Efforts should be made to recycle household waste.

    (E) They cannot just dump waste in landfills.

    (F) This is because household waste contains many materials and substances which are extremely harmful to the environment.

    (A) EF　　　　　　　　(B) DE

    (C) FE　　　　　　　　(D) DF

ACHIEVERS SECTION

Direction : Choose the word with the opposite meaning to the underlined word.

14. The bee is a very industrious creature.

    (A) Hardworking　　　(B) Indolent

    (C) Repulsive　　　　(D) Curious

Direction : Choose the best option.

15. If a business person is called munificent, he/she is

    (A) Prominent　　　　(B) Miserly

    (C) Generous　　　　(D) Rich

SPACE FOR ROUGH WORK