SCIENCE OLYMPIAD FOUNDATION

Sample Paper

SYLLABUS 2015-16

CLASS 7

SOF NATIONAL CYBER OLYMPIAD

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

SYLLABUS

Section – 1 : Verbal and Non-Verbal Reasoning.

Section – 2 : Fundamentals of Computer, Evolution of Computers, Memory & Storage Devices, Using Windows, MS-Word(Links, Mail Merge, Macros, Exploring Styles group), MS-PowerPoint(Working with Slides Master and Themes, Advancing slides using Hyperlink and Actions, Customizing and Broadcasting Slide Shows, Macros), MS-Excel (Components of MS-Excel window, Editing and formatting cells in a worksheet, Introduction to Formulas, Sorting and filtering data, Macros, Features of Insert tab), Programming in QBasic, Internet & Viruses, Networking, 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.

SOF NATIONAL SCIENCE OLYMPIAD

Total Questions : 50 | Time : 1 hr.

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

SYLLABUS

Section – 1 : Verbal and Non-Verbal Reasoning.

Section – 2 : Heat, Motion and Time, Electric Current and its Effects, Winds, Storms and Cyclones, Light, Acids, Bases and Salts, Physical and Chemical Changes, Weather, Climate and Adaptations of Animals to climate, Fibre to Fabric, Nutrition in Plants and Animals, Respiration in Organisms, Transportation in Plants and Animals, Reproduction in Plants, Natural Resources and Their Conservation.

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

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 : Integers, Fractions and Decimals, Exponents and Powers, Algebraic Expressions, Simple Linear Equations, Lines and Angles, Concept of Percentage, Profit and Loss, Simple Interest, Probability, Properties of Triangle, Symmetry, Congruence of Triangles, Rational Numbers, Perimeter and Area, Data Handling, Arithmetical Ability, Visualising Solid Shapes.

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.

SOF INTERNATIONAL ENGLISH OLYMPIAD

In association with BRITISH COUNCIL

Total Questions : 50 | Time : 1 hr.

PATTERN & MARKING SCHEME				
Section	(1) Word and Structure Knowledge	(2) Reading	(3) Spoken and Written Expression	(4) Achievers Section
No. of Questions	45			5
Marks per Ques.	1	1	1	3

SYLLABUS

Section – 1 : Spellings, Collocations and Words related to Travel, Locations, Activities, Homonyms and Homophones, etc. Synonyms, Antonyms, Analogies and Spellings, One word, Phrasal Verbs and Idioms, Modals, Word order, Nouns, Pronouns, Verbs, Adverbs, Adjectives, Articles, Prepositions, Conjunctions, Punctuation, Tenses, Voices and Narration, etc.

Section – 2 : Search for and retrieve information from various text types like News stories, Brochures, Formal and informal letters and advertisements. Understand information given in news reports, Brochures, Itinerary, etc., Acquire broad understanding of and look for specific information in short narratives, Biographies, Notices and Messages etc.

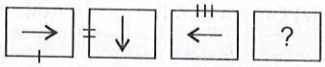
Section – 3 : Ability to understand situation-based variations in functions like requesting and refusing, Apologies and stating of preferences and expression of intent, etc.

Section – 4 : Higher Order Thinking Questions - Syllabus as per Sections 1, 2 and 3.

NCO National Cyber Olympiad

LOGICAL REASONING

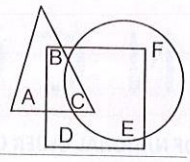
1. Which of the following options will complete the given series?



(A) 
(B) 
(C) 
(D) 

2. If TOGETHER is written as RQEGRJCT, how will PAROLE be written?
(A) NCPQJG (B) NCQPJG
(C) RCPQJK (D) RCTQNG

3. In the given figure, the triangle represents girls, square represents sportspersons and circle represents coaches. Which portion of the figure represents girls who are sportspersons but not coaches?
(A) A
(B) B
(C) C
(D) D



4. Five boys A, B, C, D and E are standing in a row. A is between C and D and B is between D and E. Which of the following pairs represents the boys standing at both the ends?
(A) C, B (B) E, C
(C) E, A (D) A, C

5. A man goes towards east five kilometres, then he takes a turn towards right and goes five kilometres. He again takes a turn towards right and goes five kilometres. With respect to the point from where he started, where is he now?
(A) East (B) North
(C) West (D) South

COMPUTERS AND INFORMATION TECHNOLOGY

6. MBP is a short form for a famous high end notebook from Apple. It is called _____.
(A) Macintosh Book Pro
(B) Mac Book Programmable
(C) Mountain Book Pro
(D) MacBook Pro

7. You can join an Active Directory domain in which of the following Windows 7 versions?
(i) Windows Home Edition
(ii) Windows Professional Edition
(iii) Windows Ultimate Edition
(iv) Windows Enterprise Edition
(A) Only (i) and (ii) (B) Only (iv)
(C) Only (ii), (iii) and (iv)
(D) All of these

8. The function of 'Wrap Text' icon in MS Excel is used to _____.
(A) Join selected cells into one larger cell
(B) Rotate text to a diagonal angle
(C) Make all content visible within a cell by displaying it on multiple lines
(D) Highlight interesting cells

9. Match the following terms with what they stand for

Term	Stands for
(i) .com	(a) Education
(ii) .edu	(b) India
(iii) .in	(c) Australia
(iv) .au	(d) Commerce

(A) (i)-(a), (ii)-(b), (iii)-(c), (iv)-(d)
(B) (i)-(b), (ii)-(c), (iii)-(d), (iv)-(a)
(C) (i)-(c), (ii)-(d), (iii)-(a), (iv)-(b)
(D) (i)-(d), (ii)-(a), (iii)-(b), (iv)-(c)

10. A browser is an interactive program that permits a user to view web pages on the computer. The browser performs which of the following services?
(A) Connecting to the source computer whose address is specified
(B) Requesting new page from the server
(C) Receiving new page
(D) All of these

11. Modern Computers compared to earlier computers are _____.
(A) Faster and larger (B) Less reliable
(C) Larger and stronger
(D) Faster and smaller

12. In MS-Word, which shortcut key is used to increase the font size of text?
(A) Ctrl + F (B) Ctrl + Alt + F
(C) Ctrl + Shift + >
(D) Ctrl + Shift + X

13. Match the virus types given in Column-I with their corresponding examples given in Column-II.

	Column-I		Column-II
(a)	Macro Virus	(i)	Lamer Exterminator
(b)	Boot Sector Virus	(ii)	Natas
(c)	Polymorphic Virus	(iii)	Melissa

(A) (a)-(iii), (b)-(i), (c)-(ii)
(B) (a)-(i), (b)-(ii), (c)-(iii)
(C) (a)-(ii), (b)-(i), (c)-(iii)
(D) (a)-(iii), (b)-(ii), (c)-(i)

ACHIEVERS SECTION

14. Match the following output devices given in Column-I with their descriptions given in Column-II.

	Column-I		Column-II
(a)	Voice Response System	(i)	It produces audio output by selecting an audio ouput from a set of pre-recorded audio response.
(b)	Voice Reproduction System	(ii)	It enables a computer to talk to a user.
(c)	Speech Synthesizer	(iii)	It converts text information into spoken sentences.

(A) (a)-(ii), (b)-(i), (c)-(iii)
(B) (a)-(i), (b)-(ii), (c)-(iii)
(C) (a)-(iii), (b)-(ii), (c)-(i)
(D) (a)-(i), (b)-(iii), (c)-(ii)

15. Which of the following QBASIC codes will produce the given output?
Output:
11
12
13

(A)
```
FOR x = 11 TO 15
PRINT x
IF (x = 13) THEN
EXIT FOR
NEXT x
```

(B)
```
FOR x = 11 TO 15
PRINT x
IF (x == 13) THEN
EXIT FOR
NEXT x
```

(C)
```
FOR x = 11 TO 15
PRINT x
IF (x <> 13) THEN
EXIT FOR
NEXT x
```

(D)
```
FOR x = 11 TO 15
PRINT x
IF (x = 13) THEN
EXIT FOR
MORE x
```

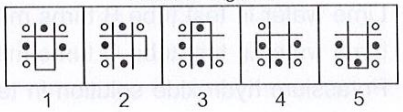
NSO National Science Olympiad

LOGICAL REASONING

1. If '+' means '×', '–' means '÷', '×' means '–' and '÷' means '+', then what will be the value of $16 \div 64 - 8 \times 4 + 2 = ?$
(A) 18 (B) 14
(C) 24 (D) 16

2. Select a figure from the options which will continue the same series as given in the Problem Figures.

Problem Figures



(A) 
(B) 
(C) 
(D) 

3. How many 5's are there in the following sequence such that the sum of the two immediately following digits is greater than the sum of the two immediately preceding digits?
3 7 6 5 8 3 2 4 5 5 4 8 7 9 1 5 3 4 8 7 5 9 8 7 6 4
(A) One (B) Two
(C) Three (D) Four

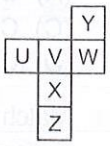
4. Anuradha remembers that her friend had visited her after 13th but before 18th of the month, while Anuradha's sister remembers that Anuradha's friend had visited after 16th but before 20th. If

it was Saturday on 16th, of the month, then on which day of the week, Anuradha's friend visit her?

(A) Saturday (B) Monday
(C) Sunday (D) None of these

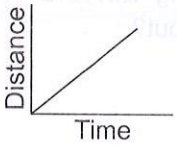
5. A piece of paper containing six joined squares labelled as shown in the diagram is folded along the edges of the squares to form a cube. The label of the face opposite the face labelled X is _____.

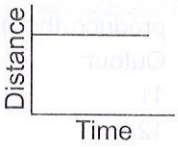
(A) Z
(B) U
(C) V
(D) Y

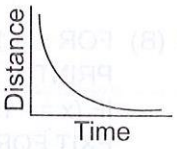


SCIENCE

6. A body moves with uniform velocity. Which of the graphs shown here is a graph of distance against time for this motion?

(A) 

(B) 

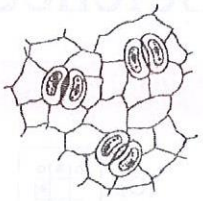
(C) 

(D) 

7. X is present in the stomach. However, presence of excess of it causes indigestion, which requires the intake of milk of magnesia to undo the effect of X. What is X?

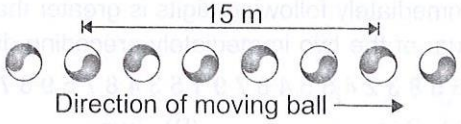
(A) HCl (B) H_2SO_4
(C) NaOH (D) KOH

8. The part of the plant shown in figure helps out in



(A) Photosynthesis
(B) Respiration
(C) Transpiration
(D) All of the above.

9. The given diagram shows a series of images of a moving ball captured by a camera.



The ball was moving at a constant velocity and the images were taken at a constant rate of 10 per second. What is the speed of the ball?

(A) 30 m s^{-1} (B) 20 m s^{-1}
(C) 45 m s^{-1} (D) 15 m s^{-1}

10. The temperature at which no more energy can be removed from matter is called

(A) Absolute zero (B) Boiling point
(C) 32° F (D) 32°C

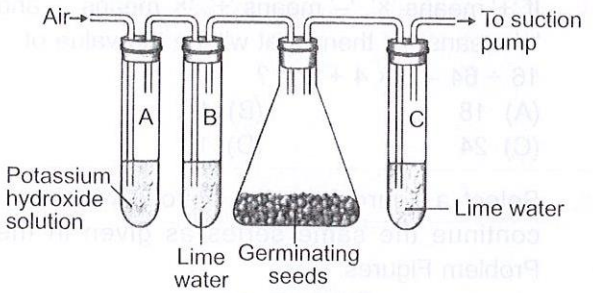
11. Which one of the following is true for all chemical reactions?

(A) There is a change in volume
(B) Heat is evolved
(C) Chemical bonds are broken or formed
(D) There is a change in mass

12. Which conditions would result in the highest rate of movement of oxygen from the alveolus into the blood capillaries?

	Concentration of oxygen in the alveolus	Concentration of oxygen in blood capillary	Rate of blood flow in blood capillary
(A)	High	Low	Fast
(B)	High	Low	Slow
(C)	Low	High	Fast
(D)	Low	High	Slow

13. Study the given set up of an experiment. You will observe that

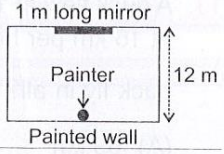


(A) Lime water in test tube B turns milky
(B) Lime water in test tube C turns milky
(C) Potassium hydroxide solution in test tube A turns red
(D) Temperature in the flask will go down.

ACHIEVERS SECTION

14. A painter leans his back against a painted wall while looking into a 1 m long mirror at the opposite end of a rectangular room as shown in the given figure. How much of the painted wall can he see through the given mirror?

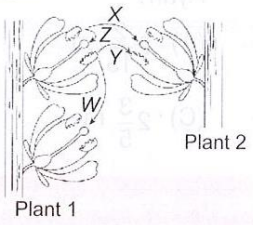
(A) 1 m
(B) 2 m
(C) 6 m
(D) 12 m



15. The given diagram shows two plants of the same species. Refer to the diagram to answer the following questions.

(i) Which arrow indicates a process that would not lead to sexual reproduction?
(ii) Which arrow represents a type of pollination that would result in greater adaptability of the particular species to potential environmental changes?

(A) (i)-*Y*, (ii)-*Z*
(B) (i)-*Z*, (ii)-*X*
(C) (i)-*Y*, (ii)-*X*
(D) (i)-*X*, (ii)-*Y*



IMO International Mathematics Olympiad

LOGICAL REASONING

1. Which will come next in the series?
az, by, cx, __?__
(A) ef (B) gh
(C) ij (D) dw

2. Which number will replace the (?) in Fig. (X)?
(A) 1
(B) 2
(C) 3
(D) 4

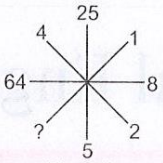
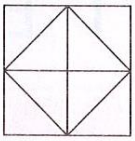


Fig. (X)

3. Which of the following options most closely resembles the mirror image of the given word, if the mirror is placed vertically to the left?
STROKE
(A) ƧTЯOЖE (B) EKORTS
(C) ROKETS (D) ƎЖOЯTS

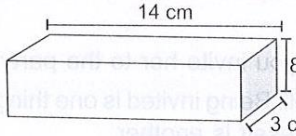
4. Count the number of triangles in the given figure.
(A) 8
(B) 10
(C) 12
(D) 14



MATHEMATICAL REASONING

5. The value of $4\frac{3}{4} - 2\frac{1}{2} =$
(A) $1\frac{1}{4}$ (B) $1\frac{3}{4}$
(C) $2\frac{1}{4}$ (D) $2\frac{3}{4}$

6. This rectangular prism has a length of 14 cm, a height of 8 cm, and a width of 3 cm. What is the volume?



(A) 25 cu cm (B) 42 cu cm
(C) 112 cu cm (D) 336 cu cm

7. Which expression represents the product of *n* and 25?
(A) 25*n* (B) 25 – *n*
(C) 25 + *n* (D) 25 ÷ *n*

8. What is the prime factorization of 45?
(A) $2^3 \times 5$ (B) $3^2 \times 5$
(C) $5^2 \times 3$ (D) $5^2 \times 9$

9. The value of 11.3 × 2.7 = _____.
(A) 29.31 (B) 29.51
(C) 30.31 (D) 30.51

10. Mohit gains 60 paise on ₹ 60. His gain percent is _____.
(A) 1% (B) 0.1%
(C) 2% (D) 1.1%

EVERYDAY MATHEMATICS

11. Kartik can throw a ball $50\frac{3}{5}$ metres high. Ayan can throw the same ball $48\frac{1}{3}$ metres high. How much farther can Kartik throw the ball than Ayan?

(A) $2\frac{2}{15}$ m (B) $2\frac{4}{15}$ m

(C) $2\frac{3}{5}$ m (D) $2\frac{4}{5}$ m

12. In a parking lot, 1 out of every 8 cars is blue. What percent of the cars in this lot are blue?

(A) 1.25% (B) 7%

(C) 9% (D) 12.5%

13. A duck flew at 18 km per hour for 3 hours, then at 15 km per hour for 2 hours. How far did the duck fly in all? $\left(\text{Speed} = \frac{\text{Distance}}{\text{Time}}\right)$

(A) 69 km (B) 75 km

(C) 81 km (D) 84 km

ACHIEVERS SECTION

14. In a quiz, 40 prizes consisting of 1st and 2nd prizes only are to be given. 1st and 2nd prizes are worth ₹ 2500 and ₹ 1500, respectively. If the total prize money is ₹ 85,000, then

(i) The equation formed is

(ii) The number of 1st prizes are

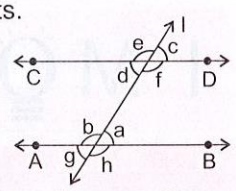
(iii) The number of 2nd prizes are

	(i)	(ii)	(iii)
(A)	$2500x + 1500(40 - x) = 85000$	25	15
(B)	$2500x - 1500(40 - x) = 85000$	36	4
(C)	$2500x \times 1500(x - 40) = 85000$	20	20
(D)	$2500x - 1500(x - 40) = 85000$	15	25

15. Study the given statements.

Statement - I : e and h are supplementary angles.

Statement - II : c and g are equal angles.



Which of the following options is correct?

(A) Both statement-I and statement-II are true.

(B) Statement-I is true and statement-II is false.

(C) Statement-I is false and statement-II is true.

(D) Both statement-I and statement-II are false.

IEO International English Olympiad

WORD AND STRUCTURE KNOWLEDGE

Direction (Q. No. 1 and 2) : Choose one suitable word for each blank.

1. Someone who interprets is _____.

(A) An interpretist (B) An interpreter

(C) An interprecian (D) An interpretor

2. Many diamond mines are _____ in South Africa.

(A) Situation (B) Situate

(C) Situated (D) Situating

3. Choose the odd one out.

(A) Disappear (B) Disperse

(C) Dissipate (D) Disadvantage

4. Find the correct phrase.

(A) Slow and study (B) Slow and steady

(C) Slow and fast (D) Slow and heady

Direction : Choose the right word.

5. All children did well in the marathon but Rahul was _____.

(A) The faster (B) Fast

(C) Fastest (D) The fastest

6. Find the incorrect part of the sentence.

"The prisoner / (A) never told me, Sir," / (B)

Watson complains. (C) No Error (D)

Direction : Complete the conversation with the correct word.

7. Ravi: Did you invite her to the party?

Rahul: Well! Being invited is one thing. _____ inviting oneself is another.

(A) However (B) Whereas

(C) Compared to (D) Besides

8. In which sentence is the word 'to' correctly used?
(A) This watermelon is to heavy.
(B) Hold it with to hands.
(C) It's very slippery to.
(D) Well, hand it to me.

READING

Direction (Q. No. 9 to 11) : Read the passage and answer the following questions.

"There is always someone worse off than you."

Once upon a time, the rabbits of Jim Corbett were so terrorized by the other animals, they did not know where to go. As soon as they saw a single animal approach them, off they used to run. One day, they saw a troop of wild horses stampeding about and in quite a panic all the rabbits scuttled off to a lake close by, determined to drown themselves rather than live in a continual state of fear. But just as they got near the bank of the lake, a troop of frogs frightened in their turn by the approach of the rabbits, scuttled off and jumped into the water. "Truly", said one of the rabbits, "things are not so bad as they seem." There is always someone worse off than you.

9. Rabbits wanted to drown themselves because _____
(A) They were scared of the horses.
(B) They did not like living under fear.
(C) They were chasing the frogs.
(D) They had nowhere to go.

10. Rabbits ran away from other animals because _____
(A) They wanted to drown themselves.
(B) They were shy.
(C) They were scared of being stepped on.
(D) They were arrogant.

11. Which of the following words would you use to describe the feeling of the rabbits on seeing the troop of wild horses?
(A) Frightened
(B) Unfriendly
(C) Worried
(D) Hostile

SPOKEN AND WRITTEN EXPRESSION

Direction (Q. No. 12 and 13) : Find one sentence to complete the dialogue.

12. Sentence 1. God wanted the people he had created to have a happy life.
Sentence 2. _____
Sentence 3. Water, air and sunlight were, therefore, given in abundance.
(A) That's why he decided to bless the earth with riches.
(B) People had to live with water, air, and sun.
(C) Earth could have them in abundance.
(D) Therefore, he created the earth.

13. Sentence 1. From ancient times Indians have worshipped plants and trees.
Sentence 2. _____
Sentence 3. While modern man often works to 'conquer' Nature, ancient Indians worshipped her.
(A) They regarded all flora and fauna as sacred.
(B) These plants give us food and oxygen.
(C) They lend beauty to our surroundings.
(D) These plants sacrifice themselves to serve us.

ACHIEVERS SECTION

Direction : Choose the best word / phrase to complete the sentence.

14. The new engineer has _____ qualifications but only a few months experience.
(A) A plenty of
(B) Plenty
(C) Plenty of
(D) A lot of

Direction : Choose the appropriate idiom.

15. The teacher approved her project after she had _____ it.
(A) Fine turned
(B) Fine tuned
(C) Tinkered with
(D) Refining

SPACE FOR ROUGH WORK

ANSWERS

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

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

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

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