

CLASS

7

SAMPLE PAPER



# National Science Olympiad

The actual test paper has 50 questions. Time allowed : 60 minutes. There are 2 sections: 15 questions in section I and 35 in section II.

## SYLLABUS

**Section – I (Mental ability)** : Integers, Fractions and Decimals, Data Handling, Simple Equations, Lines and Angles, The Triangle and its Properties, Congruence of Triangles, Comparing Quantities, Rational Numbers, Practical Geometry, Perimeter, area and volume, Algebraic Expressions, Exponents and Powers, Symmetry, Visualising Solid Shapes, Logical reasoning, Conversions, Simple probability.

**Section – II (Science)** : Heat, Motion and Time, Electric Current and its Effects, Winds, Storms and Cyclones, Light, Acids, Bases and Salts, Physical and Chemical Changes, Earth and Environment, Fibres to Fabrics, Nutrition, Respiration, Transportation, Reproduction in Plants.



# National Science Olympiad

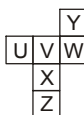
## MENTAL ABILITY

1. Jennifer wants to run 3 km. The track she runs on is  $\frac{1}{4}$  of a km in length. How many times does Jennifer have to run the length of the track to run a total of 3 km?  
(A)  $\frac{3}{4}$  (B)  $3\frac{1}{4}$  (C) 7 (D) 12
2. The bottom, side, and front areas of a rectangular box are known. The product of these areas is equal to  
(A) The volume of the box (B) The square root of the volume  
(C) Twice the volume (D) The square of the volume.
3. P can do a piece of work in 9 days. Q is 50% more efficient than P. The number of days it takes Q to do the same piece of work is  
(A)  $13\frac{1}{2}$  (B)  $4\frac{1}{2}$  (C) 6 (D) 3.

4. 
$$\begin{array}{r} B\ 2 \\ \times 7\ B \\ \hline 6396 \end{array}$$

In the product shown above, B is a digit. The value of B is

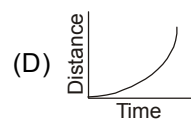
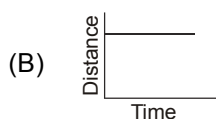
- (A) 3 (B) 5 (C) 6 (D) 8
5. A piece of paper containing six joined squares labelled as shown in the diagram is folded along the edges of the squares to form a cube. The label of the face opposite the face labeled X is



- (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?



7. What causes light to become dimmer with distance?  
(A) Diffraction and scattering (B) Refraction and scattering  
(C) Absorption and scattering (D) Reflection and scattering
8. Which of the following is a non-metal?  
(A) Mercury (B) Magnesium  
(C) Manganese (D) None of these.
9. Which of the following statements about the Jurassic period are correct?  
1. Many large dinosaurs lived during this period.  
2. Evidence of first birds have been found in fossils of this period.  
3. It saw the emergence of many forms of primates.  
4. This period related to what the Earth was 140 million years ago.  
Select the correct answer using the codes given below.  
(A) 2, 3 and 4 (B) 1, 2 and 4  
(C) 1, 3 and 4 (D) 1, 2 and 3

10. Rainbow is produced when sunlight falls on drops of rain. Which of the physical phenomena are responsible for this ?  
1. Diffusion, 2. Refraction, 3. Internal reflection  
(A) 1 and 2 (B) 2 and 3  
(C) 1, 2 and 3 (D) 1 and 3
- 
11. Which of the following is not a unit of time ?  
(A) Light year (B) Nano second  
(C) Micro second (D) Second
- 
12. The increase in area of the solid on heating is called  
(A) Superficial expansion (B) Linear expansion  
(C) Cubical expansion (D) Quadra expansion
- 
13. 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
- 
14. A lightning conductor is a  
(A) Piece of metallic wire with spikes through which current can flow  
(B) Substance that can be charged by clouds  
(C) Carbon rod (D) Plastic rod.
- 
15. 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
- 
16. The movement of oxygenated blood from the left auricle to left ventricle and then to aorta to all parts of the body is called  
(A) Extracellular circulation (B) Pulmonary circulation  
(C) Systemic circulation (D) Intracellular circulation
- 
17. The process of crossing two varieties with different characters to obtain new variety is called  
(A) Introduction (B) Selection  
(C) Hybridization (D) Conservation
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18. Chipko movement is concerned with  
(A) Conservation of natural resources (B) Plant/forest conservation  
(C) Plant hybridization (D) Environmental pollution.
- 
19. Match List I with List II and select the correct answer using the codes given below the lists :
- | <b>List I</b>                                                 |   |   |   | <b>List II</b> |
|---------------------------------------------------------------|---|---|---|----------------|
| a. Melting of ice                                             |   |   |   | 1. Radiation   |
| b. Heat coming from the Sun                                   |   |   |   | 2. Convection  |
| c. Air circulation from sea level to higher altitudes         |   |   |   | 3. Latent heat |
| d. Heating of a metal rod by keeping one end of it in a flame |   |   |   | 4. Conduction  |
| a                                                             | b | c | d |                |
| (A) 1                                                         | 2 | 3 | 4 |                |
| (B) 3                                                         | 4 | 1 | 2 |                |
| (C) 4                                                         | 1 | 3 | 2 |                |
| (D) 3                                                         | 1 | 2 | 4 |                |
- 
20. Which metal is present in the human body in greater percentage ?  
(A) Calcium (B) Sodium (C) Potassium (D) Iron

