



**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.

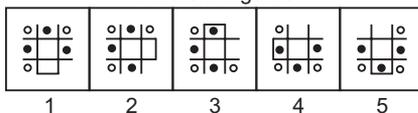
Section – 3 : Higher Order Thinking Questions - Syllabus as per Section – 2.

LOGICAL REASONING

1. If '+' means 'x', '-' means '÷', 'x' 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



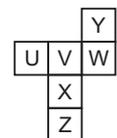
- (A) (B) (C) (D)

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 visited her?
- (A) Saturday (B) Monday
(C) Sunday (D) None of these

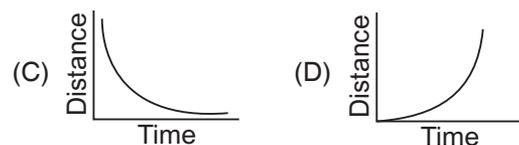
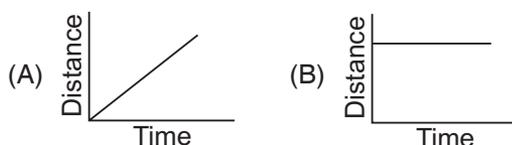
5. A piece of paper containing six joined squares labelled as shown in the diagram is folded along the edges of the squares to form a cube. The label of the face opposite the face labelled X is _____.



- (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?

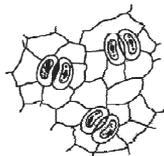


7. X is present in the stomach. However, presence of excess of it causes indigestion, which requires the intake of milk of magnesia to undo the effect of X. What is X?

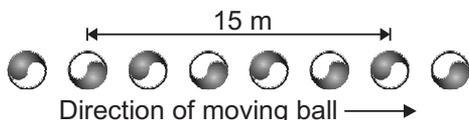
- (A) HCl (B) H_2SO_4
(C) NaOH (D) KOH

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

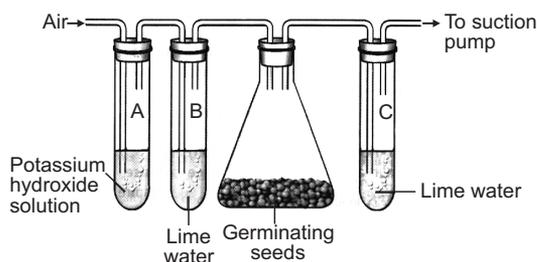
11. Which one of the following is true for all chemical reactions?

- (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

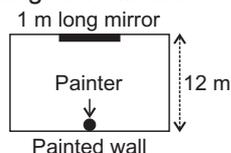


- (A) Lime water in test tube B turns milky
(B) Lime water in test tube C turns milky
(C) Potassium hydroxide solution in test tube A turns red
(D) Temperature in the flask will go down.

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?

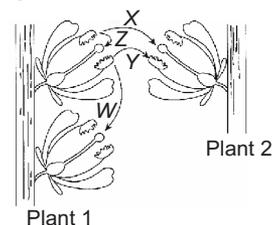
- (A) 1 m
(B) 2 m
(C) 6 m
(D) 12 m



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



ANSWERS

NSO – 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)