



SILVERZONE FOUNDATION
New Delhi, India

STEM OLYMPIAD



Science | Technology | Engineering | Mathematics



STEM OLYMPIAD

**Geniuses are
~~born, not~~
made.**



About

SilverZone STEM Innovation Olympiads (STEM) is a noble pursuit encouraging our bright youth to take part in a cause that is much bigger than themselves. A forward-thinking movement to achieve excellence in the field of Science, Technology, Engineering and Mathematics.

Structure of the Olympiad

The Olympiad is open for Classes from 3rd to Class 10th and will be conducted in two stages.

Stage 1: National Stage

In this stage the student will compete with their counterpart from their home country. They will qualify for Stage 2 only after scoring a cutoff marking of 75%.

Stage 2: International Stage

In this stage the student will compete with all the students from other countries along with their home country. The top 100 winners scoring more than 75% in Stage 1 from every class of each country will be taking part in stage 2.

Test Paper

The language medium is English only. The examination is being conducted for all classes from 3rd to 10th with the following details.

For Classes 1-2: There will be 25 questions and the duration will be 40 Minutes.

For Classes 3-5: There will be 35 questions and the duration will be 40 Minutes.

For Classes 6-10: There will be 40 questions and the duration will be 50 Minutes.

The questions will be of objective type in nature with multiple choice answers. There is no negative marking.

Syllabus & Sample Questions

Science: Light and its interaction with objects; Current and its effects; Concept of Motion and Time; Understanding temperature; Sour, bitter and salty taste of substances; Components of Environment; The processes that make life possible

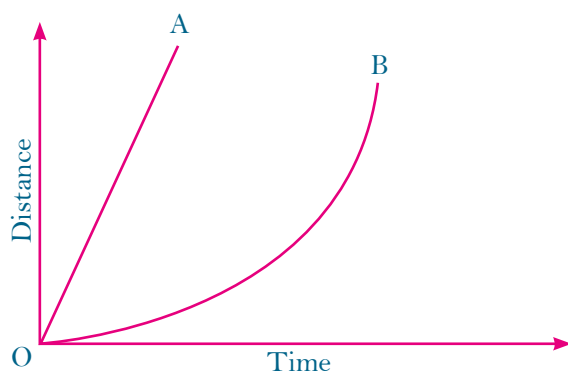
Technology & Engineering: AI - Introduction to AI, Application Area of AI, Ethics of AI, Future of AI, New Technologies [Virtual Reality]; Coding - Understanding Programming Languages, Variable in Real Life, Sequencing with Block Coding, Fun with Functions, Understanding Arrays and Collections; Intelligence assessment with Logical Reasoning - Series Completion, Blood Relation, Analogy and Classification, Coding & Decoding, Cubes and Dice

Mathematics: Number System; Algebra; Comparing Quantities; Geometry; Handling Data; Mensuration

Science

1

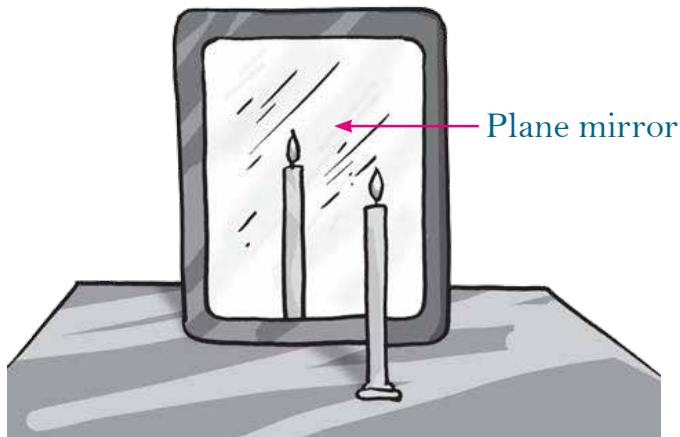
Distance-time graph of two moving objects A and B has been shown below. Which option is correct with respect to the graph?



- A. Both objects are moving with uniform speed
- B. Both objects are moving with non-uniform speed
- C. Object A is moving with uniform speed and object B is moving with non-uniform speed.
- D. Object B is moving with uniform speed and object A is moving with non-uniform speed.

2

Which statement is correct with respect to the given figure?



- A. Image of the candle can be obtained on a screen.
- B. If the distance between the candle and the mirror is 2.5 m, then the distance between the candle and its image is 5 m.
- C. If we take the candle away from the mirror then the image of the candle will get closer to the mirror.
- D. If we take candle closer to the mirror then its image will be shorter than the candle.

3

Two iron rods X and Y are taken. Rod X is heated till its temperature reaches 130°C and rod Y is cooled down to -10°C . Then both the rods are placed in water having temperature 30°C . Which option is correct regarding the above condition?

- A. Heat will flow from rod X to water.
- B. Heat will flow from rod Y to water.
- C. Heat will flow from water to both the rods.
- D. No transfer of heat will take place between the rods if they are kept in contact.

4

Raj takes a long piece of insulated flexible wire and an iron nail. He winds the wire tightly around the nail in the form of a coil then connect the free ends of the wire to a circuit. Now he allows the current to pass in the circuit. Choose the correct statements regarding the above condition.

- A. The coil in the circuit will behave like an electromagnet
- B. The coil does not allow current to pass through them.
- C. The coil does not produce any heat.
- D. The coil becomes insulator as soon as current stopped flowing in the circuit.

Technology & Engineering

5

Match the following columns.

Column I	Column II
	Entertainment
	Literature
	Agriculture
	Space Exploration

- A. I→a, II→b, III→d, IV→c
 C. I→a, II→d, III→b, IV→c

- B. I→a, II→d, III→c, IV→b
 D. I→b, II→d, III→a, IV→c

6

Which of the following is an example of Virtual Reality?



- D. All of the above

7

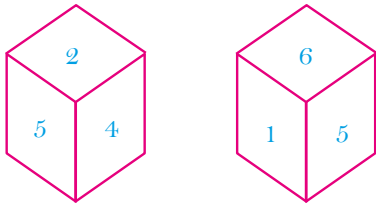
Which of the following statements correctly represent the function body in the given code snippet?

```
def f(number):
    # Missing function body
    print(f(5))
```

- A. return "number" B. print(number)
 C. print("number") D. return number

8

Two positions of the same dice are given below. Which number will be at the top if '6' is at the bottom?



- A. 2 B. 3
 C. 1 D. 4

Mathematics

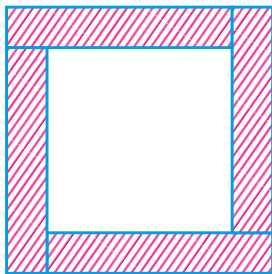
9

Ravi thinks about a number. He divides it by 12 and then subtract 37 from it. Now he get a number which is $\frac{1}{24}$ of the original number. Find this number.

- A. 888 B. 996
 C. 804 D. 900

10

Tom bought a photo frame to place his photo. He notices that the frame has four identical rectangles which are outside of a square shaped space. The perimeter of this frame is 28 inch.



Based on this information identify the statements which are true?

- A. The surface area covered by this frame on a wall is 49 square inch.
 B. The perimeter of each of the identical rectangle is 14 inch.
 C. Both (A) and (B) are correct
 D. Both (A) and (B) are not correct

11

On a parade day, if 24 students are arranged in each row, it was noticed that 19 students left. If 18 students are arranged in each row, 13 students left and if 23 students are arranged in a row, 18 students left. How many students are in the parade?

- A. 1651
C. 1680

- B. 1656
D. 1661

12

Roy purchases a ball and a cap at the price of ₹7 and ₹15 respectively. Find the total number of possible ways so that he can purchase atleast a ball and a cap for spending exactly ₹1200.



₹7



₹15

- A. 10
C. 12

- B. 11
D. None of these

ANSWERS

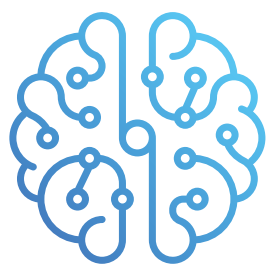
- | | | | | | |
|--------|--------|--------|---------|---------|---------|
| 1. (C) | 2. (B) | 3. (A) | 4. (A) | 5. (C) | 6. (D) |
| 7. (D) | 8. (D) | 9. (A) | 10. (C) | 11. (D) | 12. (B) |



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