20th GLORIOUS YEAR

SILVERZONE FOUNDATION

New Delhi, India

STEM OLYMPIAD

Science | Technology | Engineering | Mathematics

SILVERZONE FOUNDATION
New Delhi, India

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: Inernational 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: Chemical composition of our physical world; Force & Motion; Gravitation; Work & Energy; Sound; Cell and Tissues

Technology & Engineering: AI - Introduction to AI, AI Project Cycle, Neural Networks; Coding - Coding with Python - Intermediate; Intelligence assessment with Logical Reasoning - Series Completion, Blood Relation, Syllogism, Inserting Missing Number, Figures Sequence

Mathematics: Rational Numbers; Algebra; Linear Equation and Coordinate Geometry; Geometry; Handling Data; Mensuration

Science

1. A solution is prepared by dissolving 50 g of NaCl in 300 g of water. Find the concentration of the solution in terms of mass by mass percentage of the solution.

   A. 13.69%
   B. 16.67%
   C. 11.18%
   D. 14.29%

2. Rutherford's gold foil experiment showed that most of the alpha-particles passed through the gold foil without any deflection. This observation shows that:

   A. the nucleus is concentrated at centre
   B. the nucleus carries positive charge
   C. there is lots of empty space in atom
   D. the nucleus carries most of the mass

3 Suppose an astronaut lands on a planet and drops an object from a height of 10 m from the surface. If gravitational acceleration on the surface of the planet is half to that of the Earth, how much time will it take to reach the planet's surface?

A. About 1s
B. About 2s
C. About 3s
D. About 4s

4 A ball is thrown upwards with some initial speed. It goes up to a height of 19.6 m and then returns. If initial speed of the ball is P, Q is the time taken to reach the highest point after throw, R is the velocity of the ball one second before it reaches the maximum height and S is the time taken by the ball to return to its original position after throw, then which of the following options is correct for P, Q, R and S?

A. P–19.6 m/s, Q–3s, R–9.8 m/s, S–4s
B. P–9.8 m/s, Q–1.5 s, R–9.8 m/s, S–3s
C. P–19.6 m/s, Q–2 s, R–19.6 m/s, S–4s
D. P–19.6 m/s, Q–2 s, R–9.8 m/s, S–4s

Technology & Engineering

5 What technology do tools like Alexa and Siri use to understand voice commands?

A. Augmented Reality
B. Natural Language Processing (NLP)
C. Neural Networks
D. Blockchain

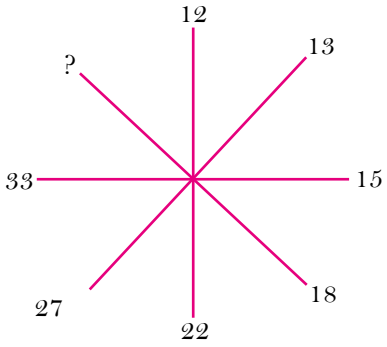
6 Name the robot that beat Garry Kasparov in chess:

A. Siri
B. Watson
C. Deep Blue
D. Sophia

7 Which of the following is/are the rules for drawing a flowchart?

A. Each flowchart must have one and only one Start and Stop object.
B. The flow of control must always enter an object from the top.
C. The flow of control must always leave an object form the bottom.
D. All of these

8 Insert the missing number in place of the question mark (?)



A. 36
B. 38
C. 40
D. 42

Mathematics

9 Shobhit has a carton of dimensions 32 cm × 28 cm × 48 cm to place few small boxes in it. Each such a small box has 3 shuttle cocks inside it. Dimensions of this small box is 10 cm × 9 cm × 21 cm.

Maximum how many shuttle cocks can be put in the carton?

A. 27
B. 54
C. 60
D. None of these

10 Tony has a clock which gets slow and loses 2% time during the first week and then in next week it gets fast and gains 4% time. He sets the clock right at 12 noon on a Sunday, what will be the time that clock will display exactly 14 days from the time it was set right?

A. 3 : 18 : 36
B. 3 : 21 : 36
C. 1 : 40 : 48
D. 1 : 54 : 48

11 In a company, the person at cashier counter has three denominations of notes of ₹10, ₹20 and ₹500. If he has to pay a bill of ₹1680, then find the total number of different ways to pay this amount.

A. 180
B. 185
C. 190
D. 200

12 In a nursery, there are 7 children of age group of 3 years to 10 years (both inclusive). If median and mean ages of the ages of these children are 8 years and the mode is 9 years, then what will be the sum of the ages of the youngest and the eldest children?

A. 12 years
B. 13 years
C. 14 years
D. 15 years

ANSWERS

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

SILVERZONE FOUNDATION

New Delhi, India

STEM OLYMPIAD

Science | Technology | Engineering | Mathematics