



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: Some important physical quantities; Some natural phenomena; Important materials; World beyond Earth; Systems inside human body

Technology & Engineering: AI- Introduction to AI, History of AI, Application of AI, Future of AI, AI Ethics and Bias; Coding - Conditionals in Details, Get Creative with Loops, Functions, Programming with Arrays, Advanced Sequencing; Intelligence assessment with Logical Reasoning - Series Completion, Classification, Direction Sense Test, Coding & Decoding, Image Reflection

Mathematics: Rational Numbers; Algebra; Geometry; Ratio and its Application; Mensuration; Handling Data

Science

1

Which combination of statements is correct?

- i. The strength of a force is usually expressed by its magnitude.
- ii. The same force can produce different pressure on objects having different surface area.
- iii. If a force of 15 N is applied to 2 m² area of an object, 7.5 pascal pressure would be produced.
- iv. Liquids and gases cannot produce pressure.

- A. i, ii and iii
- B. ii, iii and iv
- C. i, ii and iv
- D. ii and iv

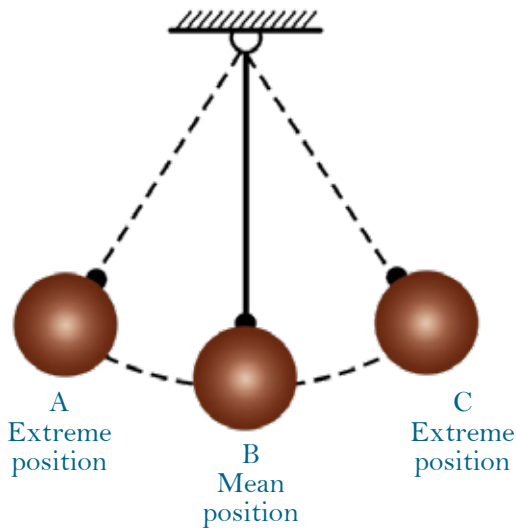
2

Suppose two planets X and Y are discovered in our solar system. Planets X and Y take 37 and 267 days respectively to complete one revolution around the Sun. If speed of revolution of both the planets is same, which planet is closer to the Sun?

- A. Planet X
- B. Planet Y
- C. Both planets are equally distant from the Sun
- D. None of these

3

If the given pendulum completes 80 oscillations in 5 seconds, how long does bob take to go from position A to C?



- A. 0.0625 s
B. 0.03125 s
C. 0.5 s
D. 1.02153 s

4

Two forces A and B are applied on an object. Force A is pulling the object in north direction while force B is pulling the object in south direction. A is bigger than B. The net force on the object is:

- A. A + B acting in the direction of A
B. A – B acting in the direction of A
C. A + B acting in the direction of B
D. A – B acting in the direction of B

Technology & Engineering

5

Which of these is not a current application of AI?

- A. Classifying rock samples to identify best places to drill for oil.
B. Self-driving vehicles utilizing computer vision to navigate around objects.
C. Making precise patient diagnosis and prescribing independent treatment
D. Collaborative robots helping humans lift heavy containers.

6

Based on which of the following parameter, Artificial Intelligence is categorized?

- A. Based on functionally only
B. Based on capabilities only
C. Based on capabilities and functionally
D. It is not categorized

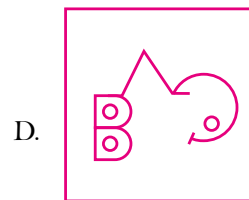
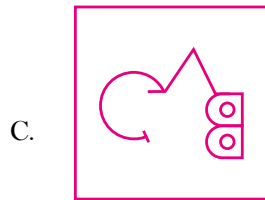
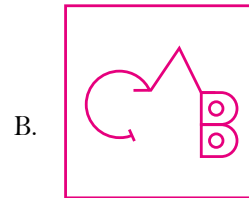
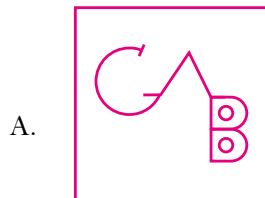
7

Which of the following defines a variable in Python?

- A. `var name="Steve"`
B. `string name="Steve"`
C. `name="Steve"`
D. All of the above

8

If a mirror is placed on the northern side then which of the answer figures is the right image of the given figure.



Mathematics

9

John gifted a diamond pendent of worth ₹240,000 to his wife. Due to some mis-happening it breaks into two pieces. The weight of these two pieces are in the ratio of 12 : 13. If the price of the diamond is proportional to the square of its weight, then what will be the loss of John due to its breaking?

A. ₹115200

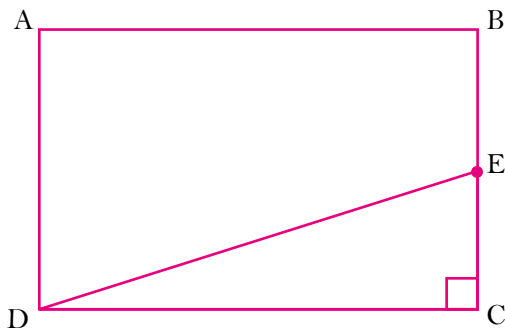
B. ₹116420

C. ₹119808

D. ₹120216

10

Rahul measures the sides of a rectangular plot ABCD shown below.



He finds that $AB + BC + CD = 42$ m. He also joins DE where E is the mid point of BC. If the length of DE measured by him is 15 m then what will be the area of this plot?

A. 244 m^2 B. 196 m^2 C. 216 m^2

D. None of these



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