AMALTHEA '25

AN AMALTHEA '25 EVENT

BRAINWIZ

OFFICIAL RULEBOOK

VENUE: AB1–101/102

DATE: 8th–9th November

TIME: 10 AM onwards

FEEL FREE TO CONTACT: Shubham (93165 92208)

INTRODUCTION

Brainwiz is a unique competition for students in grades 9–12 designed to highlight their skills beyond the classroom. Participants will be challenged to quickly grasp and apply new concepts through questions.This competition offers a distinct and rewarding experience that stands apart from traditional school exams.

RULES FOR PARTICIPATION

- Students in are grades 9–12 eligible to participate in Brainwiz.
- Participants must register online by the specified deadline through the official Amalthea'25 website.
- The mode of participation is individual.
- All the questions and instructions will be in English only.
- The event organizers reserve the right to disqualify participants who engage in cheating or misconduct.

- Participants are required to bring their school ID cards and event registration confirmation on the day of the event.
- Participants must adhere to the rules and maintain academic integrity throughout the competition.
- The decision of the event judges and organizers is final and binding.
- Any modified rules or guidelines will be communicated to the participants.

GUIDELINES FOR PARTICIPATION

ROUND 1

- The first round is conducted online, with separate exams for grades 9–10 and 11–12.
- These exams will include multiple-choice and short-answer questions.
- The top 200 performers from each category will advance to the second round.

ROUND 2

- The second round is held offline at IITGN.
- Like the first round, this round will also have separate exams for grades 9–10 and 11–12, and the questions will also include material taught in the workshops.
- Logical Reasoning. Questions will also be there from a surprise topic/concept, which will be taught 1 hour before the exam begins. So participants are requested to report atleast 1.5 hours before the exam.
- Scoring will follow a relative grading system. In the event of ties, in online round, both participants will advance in to the offline round, while for ties in offline rounds, the quality of answers will be reviewed to determine the final placement

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SAMPLE QUESTIONS

GRADE 9th–10th

PHYSICS

A full length virtual image of a distant tall building can definitely be seen by using _____.

1. Concave Mirror
2. Convex Mirror
3. Plane Mirror
4. Both 1 and 3

Correct Answer: 2. Convex Mirror
Reasoning: Concave Mirror will not form a virtual image. A full length image, although generated, may not be definitely seen by an observer every time.

CHEMISTRY

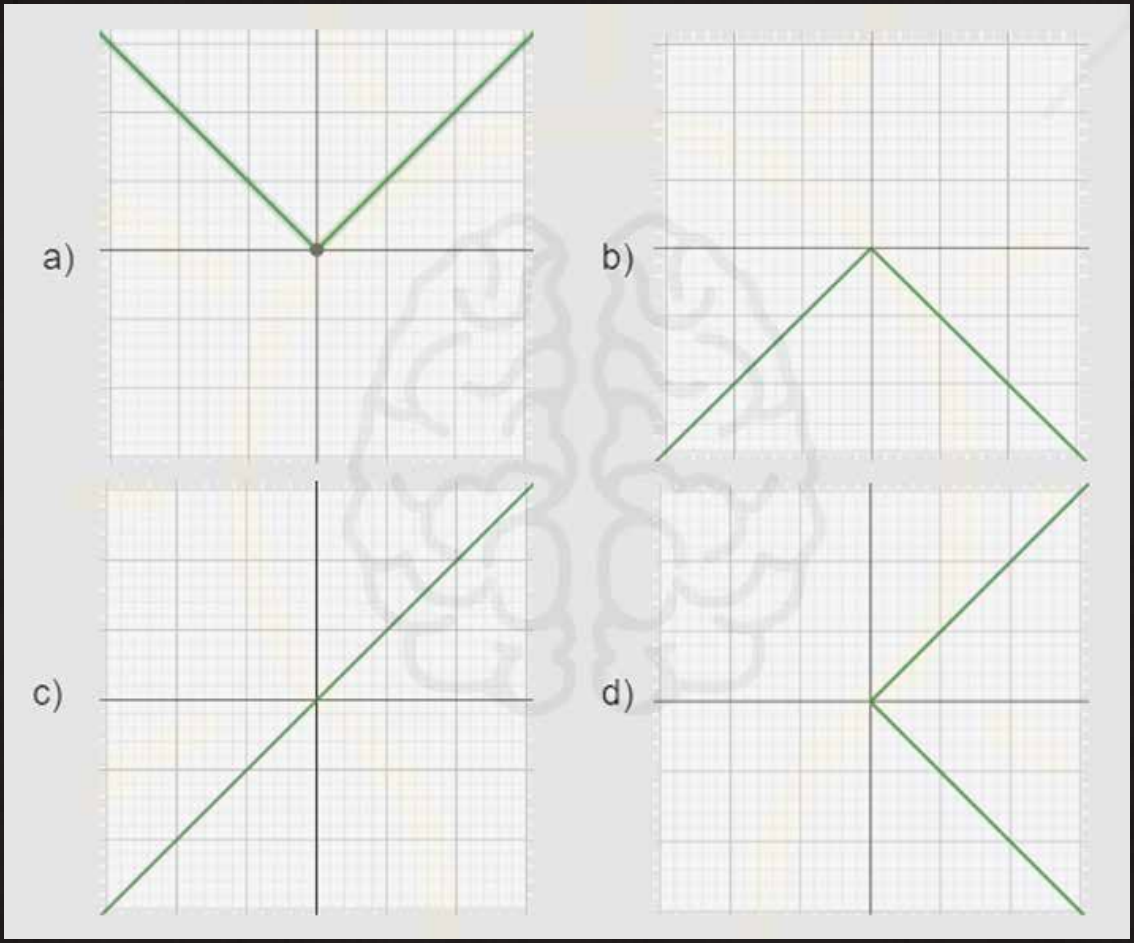
Scattering of light definitely takes place in:

1. True Solutions
2. Suspensions
3. Electrolytic Solutions
4. Colloidal Solutions

Correct Answer: 4. Colloidal Solutions

MATHEMATICS

What is the correct graph of y=|x|, where |a| is absolute value of a?



Correct Answer: option a

GRADE 11th–12th

PHYSICS

A ball of specific gravity 0.5 is dropped from a height of 45 meters into a large bucket of water. How much time until the ball starts going back up again? (Assume the ball doesn't collide with the bottom of the bucket, no viscous force is acting on the ball, and g = 10 m/s^2)

1. 3 m/s
2. 6 m/s
3. 10 m/s
4. 12 m/s

Answer: 2. 6s [time taken to reach the surface of water: 3s (sqrt((2*45)/10)) + time taken to halt in the water: 3s (Net force acting on ball is mg in upward direction. Use equations of motion.)

CHEMISTRY

The concentrated sulphuric acid that is peddled commercially is 95% sulphuric acid by weight. If the density of this commercial acid is 1.834 g/cm^3, the molarity of this solution is

1. 17.8M
2. 15.7M
3. 10.5M
4. 12M

Answer: 1. 17.8 M [Mass of solution of 1 L = 1834g. Mass of sulphuric acid in solution = 0.95*1834 = 1742.3g. Moles of sulphuric acid in 1 L solution = 1742.3/98 = 17.78 mol. Hence 17.8 M

MATHEMATICS

You have 5 different books on mathematics and 4 different books on physics. In how many ways can you arrange these 9 books on a shelf such that the mathematics books are all together and the physics books are all together?

a) 2
b) 9!
c) 2880
d) 5760

vAnswer: d) 5760 [2! * 4! * 5!]

LOGICAL REASONING

If 7**5=30, 6**4=20, 9**4=32 then 10**9=?

1. 81
2. 43
3. 67
4. 79

Answer: 1. 81 [x**y = (x–1)*y]

PRIZES

Prizes will be awarded to the top performers in each category. Total prize pool is ₹30000. Top ten performers in each category will receive mementos