



**SNS College of Technology(Autonomous)  
Coimbatore-35  
Academic Year 2023 – 2024 (Even)**



## **UNIT 2 QUANTITATIVE ABILITY IV**

**T1: Physics Puzzles**

## Cuppa conundrum

*You are in a rush to work. You pour yourself a cup of black coffee, but it is too hot. You intend to add a fixed amount of cold milk to it, but you know that even after that, the coffee will need to cool down for a few minutes before you can drink it.*

*In which case does the coffee cool down more:*

- 1) Add milk right away, then wait a few minutes before drinking.*
- 2) Wait a few minutes, then add milk just before drinking.*

**Solution** 2) Wait a few minutes, then add milk just before drinking

In case 2) the the liquid in the cup is hotter at the start than in case 1) when the milk has been added. Hotter things cool faster than less hot things because there is a greater difference in temperature with the surrounding environment. Thus the rate of cooling will be greater in case 2). Since in both cases, the liquid is cooling for the same time at different rates, the liquid that spends most time cooling with the faster rate will be cooler at the end, once the milk is added

## **Fly away**

*A fly has landed at the bottom of a glass that is sitting on an a very sensitive digital scale. All of a sudden the fly takes off. What happens to the readout on the scale?*

- 1) it goes up
- 2) it goes down

**Solution:** Both! First it goes up, and then it goes down.

Imagine you are standing on your bathroom scales. In order to jump off the scales you will push down on the scales, which will register a heavier weight. The situation with the fly is similar. Its wings push the air down, which, in turn, pushes the bottom of the glass. But when it is high enough so the air movement does not reach the glass bottom, the measured weight will be that of the empty glass.

## **Bounding balls**

A weightless string connects two identical metal balls. The middle of the string is over the edge of a table. You let go of both balls at the same time. What will happen sooner: ball 1 flying off the table or ball 2 hitting its side?

**Solution** Ball 1 flies off the table

*The tension force of the string is the same on both sides. But the horizontal component of that force is larger for ball 1 than for ball 2. Hence ball 1 will accelerate in the horizontal direction faster and take less time to travel the same horizontal distance.*

Nuclear sizes are expressed in a unit named

- a) Fermi
- b) angstrom
- c) newton
- d) tesla

Light from the Sun reaches us in nearly

- a) 2 minutes
- b) 4 minutes
- c) 8 minutes
- d) 16 minutes

**Answer:** Option C

Stars appears to move from east to west because

- a) all stars move from east to west
- b) the earth rotates from west to east
- c) the earth rotates from east to west
- d) the background of the stars moves from west to east

**Answer:** Option B

Light year is a unit of

- a) time
- b) distance
- c) light
- d) intensity of light

**Answer:** Option B

