

1. **Answer:** B

**Explanation:** Option B is a direct statement of the first postulate of the special theory of relativity. Also known as the relativity postulate, it states that the laws of physics are the same in all inertial reference frames.

2. **Answer:** C

**Explanation:** Option A is fundamentally wrong because accelerating reference frames are not considered inertial. Using the same reasoning, option B is also incorrect because rotating reference frames are accelerating due to constantly changing directions. Therefore, rotating reference frames are not inertial. However, inertial reference frames are considered a special type of reference frame (that's why the field of study is called special relativity), making option C a correct choice.

3. **Answer:** D

**Explanation:** Option D is the exact statement of the second postulate of the special theory of relativity, also known as the speed of light postulate.

4. **Answer:** D

**Explanation:** The 2nd postulate of special relativity (aka the speed of light postulate) states that the speed of light in a vacuum takes a constant value of  $c$ . This is also the speed limit of the universe, and hence, not even light itself can move at a speed higher than the universal speed constant,  $c$ .

5. **Answer:** E



## Introduction to Relativity

*Answer Key*

**Explanation:** Option A is an incorrect statement because, by definition, an inertial reference frame is a reference frame that does not accelerate. Due to its rotation, the Earth is constantly accelerating and hence, does not satisfy the condition of being an inertial reference frame. Option B is also wrong because the special theory of relativity does not consider the force of gravity, as gravity is only considered under the general theory of relativity. Option C is also incorrect because length contraction predicts that an observer on Earth will see a rocket moving near the speed of light as shorter than the actual.



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