

**Directions:** Choose the letter of the correct answer.

1. Which of the following is correctly matched?
  - a. postulate 1 - Maxwell's relations apply to all inertial reference frames
  - b. postulate 1 - The laws of physics are the same on all inertial reference frames
  - c. postulate 1 - an inertial reference frame is a reference frame that is not accelerating
  - d. postulate 1 - Only Newtonian physics and Maxwell's relations must be satisfied when measurements are done in an inertial reference frame
  
2. Which of the following is/are TRUE?
  - a. All reference frames are inertial.
  - b. A rotating reference frame is an inertial reference frame.
  - c. The inertial reference frame is a special type of reference frame.
  - d. All of the above
  - e. None of the above
  
3. Which of the following correctly states the speed of light postulate?
  - a. The speed of light in a vacuum follows Newtonian physics.
  - b. The speed of light in a vacuum is constant as long as it travels in a straight path unaffected by gravity.
  - c. The speed of light in a vacuum is constant due to the uniform refractive index and constant permittivity of space.
  - d. The speed of light in a vacuum is constant in all inertial reference frames regardless of the speed of the observer and the light source relative to one another.
  
4. Oliver saw a comet traveling at a speed of 400 m/s. He claimed that the light coming from the comet travels at a speed of  $c + 400$  m/s. This statement is a direct violation of
  - a. Newtonian physics
  - b. Maxwell's relations

- c. 1st postulate of special relativity
  - d. 2nd postulate of special relativity
5. Which of the following statements is/are TRUE?
- a. Earth is an example of an inertial reference frame.
  - b. The special theory of relativity deals with the study of events observed in inertial reference frames as influenced by gravity.
  - c. A rocket ship moving near the speed of light towards a certain star will appear longer than its actual size to the observer on Earth.
  - d. All of the above
  - e. None of the above