

- 1) **B** The luminiferous ether was postulated by 19th century physicists because:
- A) They detected it with interference experiments.
 - B) It was thought to be impossible for a wave to exist in a vacuum.
 - C) Maxwell included the ether in his theory of electricity & magnetism.
 - D) Only a gas (ether) can carry a transverse wave.
 - E) They didn't yet understand relativity.
- 2) **E** The Michelson-Morley experiment of 1887 was unable to detect any motion of the Earth relative to the ether. The best explanation at that time was:
- A) The ether must always move in exactly the same direction and speed as the Earth.
 - B) The Earth drags the ether along with itself in a spherical shell.
 - C) The experiment didn't have enough precision to measure the ether velocity.
 - D) The Earth really is at the center of the Universe.
 - E) Good question. Nobody really knew what the experiment meant.
- 3) **C** A Galilean frame of motion is one in which:
- A) The frame is rotating.
 - B) The frame is accelerating in some direction.
 - C) Velocities may simply be added or subtracted.
 - D) Electromagnetic radiation must move in a curve.
 - E) Newton's laws of motion are not obeyed.
- 4) **B** An analysis of Maxwell's equations reveals that they are self-consistent and will correctly predict experimental results if:
- A) They obey Galilean relativity only
 - B) They obey Einstein's relativity only.
 - C) They obey no type of relativity
 - D) They obey both Galilean and Einstein's relativity
- 5) **A** Relativity in physics (whether Galileo's or Einstein's) refers to:
- A) How you deal with the physics of objects that are moving relative to one another.
 - B) Complicated mathematical manipulations of partial differential equations.
 - C) Whether or not you assume that light moves in a straight line.
 - D) The exact value that you place on the speed of light.
 - E) The philosophical idea that everything is relative.