

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) Compared to special relativity, general relativity is more concerned with
 - A) space-time geometry.
 - B) acceleration.
 - C) gravitation.
 - D) all of these**
 - E) none of these

- 2) Important support for General Relativity came from studies of the precession of the orbit of
 - A) Venus.
 - B) asteroids.
 - C) Mercury.**
 - D) Mars.
 - E) Earth.

- 3) Fire a cannonball from a cannon, and it curves due to gravity. Shine a light from a flashlight, and it
 - A) curves slightly, but not as much per second as the cannonball.
 - B) follows a straight-line path with no curvature at all.
 - C) curves half as much as the cannonball.
 - D) curves per second the same as the cannonball.**

- 4) From a general relativistic point of view, a person on the ground floor of a skyscraper ages
 - A) at the same speed as a person on the top floor.
 - B) faster than a person on the top floor.
 - C) slower than a person on the top floor.**

- 5) Light bends when it
 - A) passes a massive star.
 - B) passes through a gravitational field.
 - C) both of these**
 - E) neither of these

- 6) Einstein's theory of gravitation obeys the correspondence principle because it
 - A) agrees with proven results of Newton's theory.**
 - B) has been proven in repeated experiments.
 - C) corresponds to truer description of events in very large gravitational fields.
 - D) none of these

- 7) According to the principle of equivalence,
- A) observations made in an accelerating reference frame are indistinguishable from those made in a gravitational field.
 - B) space and time are two forms of the same thing.
 - C) mass and energy are two forms of the same thing.
 - D) electricity and magnetism are two forms of the same thing.
 - E) all of these
- 8) If the sun collapsed into a black hole, the time required for Earth to orbit the collapsed sun would
- A) increase.
 - B) stay the same.
 - C) decrease.
- 9) An astronaut falling into a black hole would see the universe
- A) red-shifted.
 - B) blue-shifted.
- 10) If a star that is 10 light-years away from Earth explodes, gravitational waves from the explosion will reach Earth in
- A) 10 years.
 - B) less than 10 years.
 - C) more than 10 years.