Physics EOC Review

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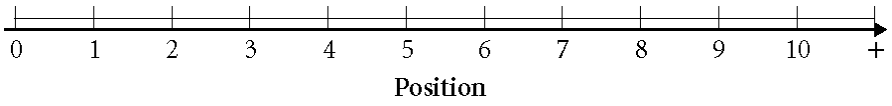
Multiple Choice

Identify the choice that best completes the statement or answers the question.



____ 1. In the graph above, what is the correct description of any location to the left of the zero?

a. negative position
b. negative displacement
c. negative change of displacement
d. negative distance

____ 2. In the graph above, a toy car rolls from +3 m to +5 m. Which of the following statements is true?

a. x_f = +3 m
b. v_{avg} = 3 m/s
c. Δx = +3 m
d. x_i = +3 m

____ 3. Which of the following line segments on a position versus time graph is physically impossible?

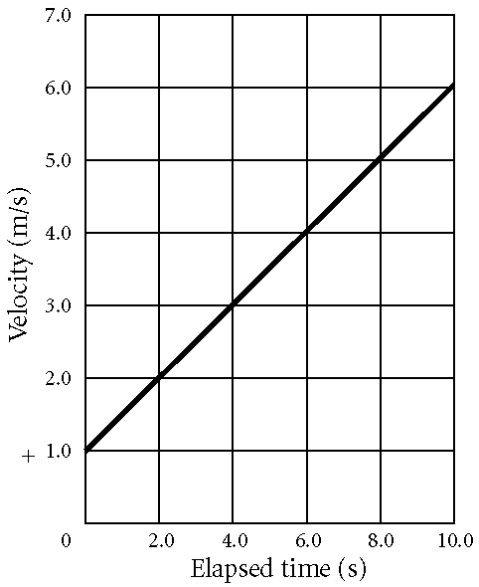
a. a vertical line
b. a straight line that slopes to the right
c. a straight line that slopes to the left
d. a horizontal line

____ 4. Which of the following is the equation for acceleration?

a. $a = \Delta v \Delta t$
b. $a = (v_i - v_f)/(x_i - x_f)$
c. $a = \frac{\Delta t}{\Delta v}$
d. $a = \frac{\Delta v}{\Delta t}$

____ 5. What is the SI unit of acceleration?

a. m/s^2
b. m/s
c. $m\Delta s^2$
d. m^2/s

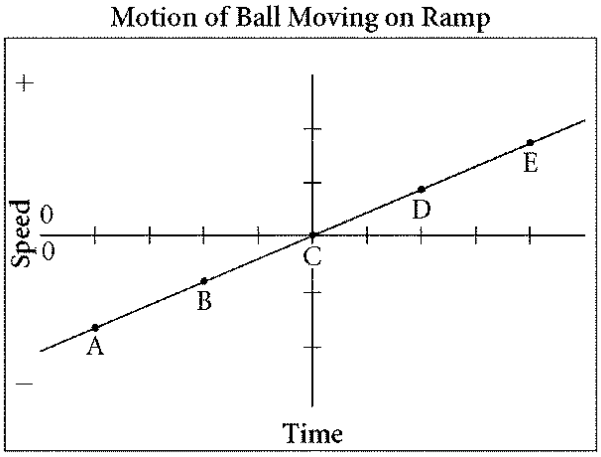


____ 6. The graph above describes the motion of a cyclist. The graph illustrates that the acceleration of the cyclist

a. is zero.
b. increases.
c. decreases.
d. is constant.

____ 7. The graph above describes the motion of a cyclist. During the interval shown, the cyclist is

a. speeding up.
b. slowing down.
c. traveling at the same speed.
d. at rest.



_____ 8. The graph above describes the motion of a ball. At what point does the ball have an instantaneous velocity of zero?

a. C
c. D
b. A
d. B

_____ 9. The graph above describes the motion of a ball. At what point is the speed of the ball equal to its speed at B?

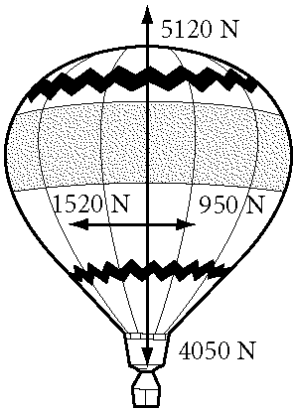
a. D
c. C
b. A
d. none of the above

_____10. The graph above describes the motion of a ball. At what point is the velocity of the ball equal to its velocity at B?

a. A
c. C
b. D
d. none of the above

_____11. Which of the following is the cause of an acceleration?

a. velocity
c. speed
b. force
d. inertia



____12. In the free-body diagram shown above, which of the following is the gravitational force acting on the balloon?

a. 5120 N
c. 1520 N
b. 950 N
d. 4050 N

____13. A late traveler rushes to catch a plane, pulling a suitcase with a force directed 30.0° above the horizontal. If the horizontal component of the force on the suitcase is 60.6 N, what is the force exerted on the handle?

a. 65.2 N
c. 53.0 N
b. 70.0 N
d. 95.6 N

____14. Which of the following equations can be used to directly calculate an object's momentum, **p**?

a. $\mathbf{p} = \frac{m}{\mathbf{v}}$
c. $\mathbf{p} = m\mathbf{v}$
b. $\mathbf{p} = \mathbf{F}\Delta t$
d. $\Delta\mathbf{p} = \mathbf{F}\Delta t$

____15. When comparing the momentum of two moving objects, which of the following is correct?

a. The more massive object will have less momentum if the velocities are the same.
b. The less massive object will have less momentum if the velocities are the same.
c. The more massive object will have less momentum if its velocity is greater.
d. The object with the higher velocity will have less momentum if the masses are equal.

____16. A child with a mass of 23 kg rides a bike with a mass of 5.5 kg at a velocity of 4.5 m/s to the south. Compare the momentum of the child with the momentum of the bike.
a. The child has a greater momentum than the bike.
b. Both the child and the bike have the same momentum.
c. The bike has a greater momentum than the child.
d. Neither the child nor the bike has momentum.

____17. When an object is moving with uniform circular motion, the object's tangential speed
a. is circular.
b. is directed toward the center of motion.
c. is constant.
d. is perpendicular to the plane of motion.

____18. What term describes a change in the speed of an object in circular motion?
a. centripetal force
b. tangential acceleration
c. tangential speed
d. centripetal acceleration

A child rides a bicycle in a circular path with a radius of 2.0 m. The tangential speed of the bicycle is 2.0 m/s. The combined mass of the bicycle and the child is 43 kg.

____19. What is the magnitude of the bicycle's centripetal acceleration?
a. 4.0 m/s^2
b. 1.0 m/s^2
c. 86 m/s^2
d. 8.0 m/s^2

____20. Tides are caused by
a. differences in the gravitational force of the moon at different points on Earth.
b. differences in Earth's gravitational field strength at different points on Earth's surface.
c. fluctuations in the gravitational attraction between Earth and the moon.
d. differences in the gravitational force of the sun at different points on Earth.

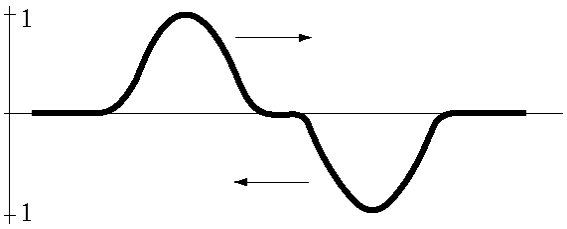
____21. If you lift an apple from the ground to some point above the ground, the gravitational potential energy in the system increases. This potential energy is stored in
   a. the apple.
   b. the gravitational field between Earth and the apple.
   c. both the apple and Earth.
   d. Earth.

____22. Which of the following is proportional to the kinetic energy of atoms and molecules?
   a. potential energy
   b. thermal equilibrium
   c. elastic energy
   d. temperature

____23. Which of the following is a form of kinetic energy that occurs within a molecule when the bonds are stretched or bent?
   a. vibrational
   b. internal
   c. rotational
   d. translational

____24. What are the energies associated with atomic motion called?
   a. bond energy
   b. internal energy
   c. potential energy
   d. kinetic energy

____25. What accounts for an increase in the temperature of a gas that is kept at constant volume?
   a. Energy has been removed as work done by the gas.
   b. Energy has been removed as heat from the gas.
   c. Energy has been added as heat to the gas.
   d. Energy has been added as work done on the gas.



____26. Which of the following types of interference will occur when the pulses in the figure above meet?

a. no interference
b. partial interference
c. complete destructive interference
d. complete constructive interference

___ 27. Sound waves

a. are longitudinal waves.
b. do not require a medium for transmission.
c. are transverse waves.
d. are a part of the electromagnetic spectrum.

____28. The highness or lowness of a sound is perceived as

a. compression.
b. ultrasound.
c. pitch.
d. wavelength.

____29. Pitch depends on the ____ of a sound wave.

a. amplitude
b. frequency
c. power
d. speed

____30. The Doppler effect occurs with

a. only transverse waves.
b. all waves.
c. only sound waves.
d. only water waves.

____31. Part of a pencil that is placed in a glass of water appears bent in relation to the part of the pencil that extends out of the water. What is this phenomenon called?

a. diffraction
b. interference
c. reflection
d. refraction

____32. Refraction is the bending of a wave disturbance as it passes at an angle from one ____ into another.

a. area
b. boundary
c. glass
d. medium

____33. The ____ of light can change when light is refracted because the medium changes.

a. medium
b. frequency
c. wavelength
d. transparency

____34. When a light ray passes from water (n = 1.333) into diamond (n = 2.419) at an angle of 45°, its path is

a. bent away from the normal.
b. parallel to the normal.
c. bent toward the normal.
d. not bent.

____35. What happens when a rubber rod is rubbed with a piece of fur, giving it a negative charge?

a. Electrons are added to the rod.
b. The fur is left neutral.
c. Protons are removed from the rod.
d. Electrons are added to the fur.

____36. A repelling force occurs between two charged objects when the charges are of

a. unlike signs.
b. like signs.
c. equal magnitude.
d. unequal magnitude.

____37. Which sentence best describes electrical conductors?

a. Electrical conductors are poor heat conductors.
b. Electrical conductors have low mass density.
c. Electrical conductors have electric charges that move freely.
d. Electrical conductors have high tensile strength.

____38. Charge buildup between the plates of a capacitor stops when

a. unequal amounts of charge accumulate on the plates.
b. there is no net charge on the plates.
c. the potential difference between the plates is equal to the applied potential difference.
d. the charge on both plates is the same.

____39. Which of the following situations is *not* true for magnets?
   a. Unlike poles repel each other.
   b. A north pole and a south pole will attract each other.
   c. North poles repel each other.
   d. Like poles repel each other.

____40. All of the following statements about magnetic field lines around a permanent magnet are true *except* which one?
   a. Magnetic field lines always form a closed loop.
   b. Magnetic field lines appear to end at the north pole of a magnet.
   c. In a permanent magnet, the field lines actually continue within the magnet itself.
   d. Magnetic field lines have no beginning or end.

____41. When was the existence of the neutron confirmed?
   a. in ancient times
   b. in 1895
   c. in 1932
   d. in 1969

____42. On planet Q the standard unit of volume is called the guppy. Space travelers from Earth have determined that one liter = 38.2 guppies. How many guppies are in 150 liters?
   a. 5 730 guppies
   b. 0.255 guppies
   c. 3.93 guppies
   d. 188 guppies

____43. On planet Z, the standard unit of length is the foose. Ann the Astronaut is 5.90 feet tall on earth. She lands on planet Z and is measured to be 94 foosi tall. Her partner Rachael is 88 foosi tall. How tall is Rachael on Earth?
   a. 5.2 feet
   b. 5.5 feet
   c. 5.8 feet
   d. 6.3 feet

____44. When NASA was communicating with astronauts on the moon, the time from sending on the Earth to receiving on the moon was 1.28 s. Find the distance from Earth to the moon. (The speed of radio waves is 3.00×10^8 m/s.)
a. 240 000 km
b. 384 000 km
c. 480 000 km
d. 768 000 km

____45. Which of the following is a problem that some people blame on technology?
a. improved transportation
b. widespread pollution
c. reduction of acid rain
d. economic growth

____46. Uranium-235, uranium-238, and uranium-239 are different
a. isotopes.
b. ions.
c. elements.
d. none of the above

____47. Most nuclear power reactors work by
a. generating heat.
b. producing steam.
c. boiling water.
d. all of the above

____48. Plutonium is not found in natural ore deposits because it
a. is artificially created.
b. has a short half-life.
c. is a gas at room temperature.
d. is chemically inert.

____49. Einstein reasoned that _____.
a. all motion is relative
b. a spaceship cannot measure its speed relative to empty space
c. a spaceship can only measure its speed relative to other objects
d. all of the above

____50. What is the most abundant element in the known universe?
a. Nitrogen
b. Oxygen
c. Hydrogen
d. Carbon

____51. The acceleration due to gravity at the surface of Planet X is 10 m/s^2. What is the acceleration due to gravity at an altitude of 3 000 km above the surface of this planet?
a. 10 m/s^2
b. 8.0 m/s^2
c. 4.4 m/s^2
d. More information is needed.

____52. According to Kepler's second law, Halley's Comet circles the Sun in an elliptical path with the Sun at one focus of the ellipse. What is at the other focus of the ellipse?
a. nothing
b. the Earth
c. The comet itself passes through the other focus.
d. The tail of the comet stays at the other ellipse.

____53. What famous laboratory located in northern NM is responsible for the development of the first nuclear weapons in the United States?
a. Sandia National Labs
b. Los Alamos National Labs
c. UNM
d. NMSU

____54. Who was Robert Oppenheimer?
a. The director of Los Alamos National Labs
b. The director at White Sands
c. A wealthy philanthropist
d. none of these

____55. What location in New Mexico was home to the first test of a nuclear weapon in the United States?
a. Albuquerque Bombing range
b. Trinity Site
c. Los Alamos National Labs
d. Santa Fe Testing Center

Physics EOC Review
Answer Section

1	ANS:	A	28	ANS:	C
2	ANS:	D	29	ANS:	B
3	ANS:	A	30	ANS:	B
4	ANS:	D	31	ANS:	D
5	ANS:	A	32	ANS:	D
6	ANS:	D	33	ANS:	C
7	ANS:	A	34	ANS:	C
8	ANS:	A	35	ANS:	A
9	ANS:	A	36	ANS:	B
10	ANS:	D	37	ANS:	C
11	ANS:	B	38	ANS:	C
12	ANS:	D	39	ANS:	A
13	ANS:	B	40	ANS:	B
14	ANS:	C	42	ANS:	A
15	ANS:	B	43	ANS:	B
16	ANS:	A	44	ANS:	B
17	ANS:	C	45	ANS:	B
18	ANS:	B	46	ANS:	A
19	ANS:	C	47	ANS:	E
20	ANS:	A	48	ANS:	B
21	ANS:	B	49	ANS:	D
22	ANS:	D	50	ANS:	C
23	ANS:	A	51	ANS:	D
24	ANS:	B	52	ANS:	A
25	ANS:	C	53	ANS:	B
26	ANS:	C	54	ANS:	A
27	ANS:	A	55	ANS:	B