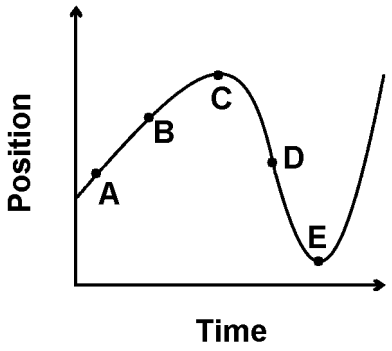
Base your answers to questions **1** through **3** on the position versus time graph below which shows the motion of a particle on a straight line.



1. At which of the labeled points is the magnitude of the velocity greatest?
   (A) *A* (D) *D*
   (B) *B* (E) *E*
   (C) *C*

2. At which of the labeled points is the velocity zero?
   (A) *B* only (D) *C* and *D*
   (B) *E* only (E) *C* and *E*
   (C) *D* only

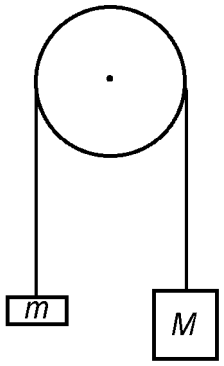
3. At which of the labeled points is the magnitude of the acceleration greatest?
   (A) *A* (D) *D*
   (B) *B* (E) *E*
   (C) *C*

---

4. A 125 kg woman pushes a 75 kg couch across a floor at a constant velocity. The coefficient of kinetic friction between the floor and the couch is .6. She is capable of produce 2250 W of power. The maximum possible velocity of the couch is most nearly
   (A) 50 m/s (D) 3 m/s
   (B) 25 m/s (E) the couch will not move
   (C) 5 m/s

5. An object has a non-zero acceleration. Of the following, which could be constant?
   I. speed
   II. kinetic energy
   III. linear momentum
   (A) I only (D) II only
   (B) I and II only (E) II and III only
   (C) I and III only

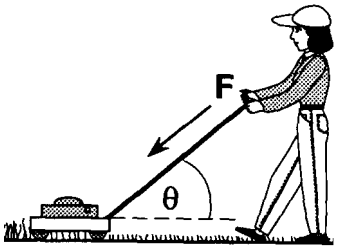
6.



Blocks of mass M and m are connected by a massless string across a massless, frictionless pulley, as shown in the above diagram. Which of the following properly represents the acceleration of the block with mass M when released from rest?

(A) $\frac{Mg}{m}$
(B) $\frac{mg}{M+m}$
(C) $\frac{Mg}{M+m}$
(D) $\frac{(M+m)g}{M-m}$
(E) $\frac{(M-m)g}{M+m}$

7.



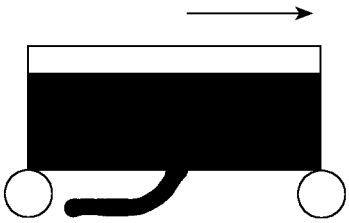
A woman pushes a lawn mower with a force of F at an angle θ to the ground. If F = 20N and $\theta = 30°$, what is the net work done in moving the lawnmower 5m?
(A) 25 J (D) 14.4 J
(B) 50 J (E) 35 J
(C) 86.67 J

8. The potential energy of an object is given by $U(x) = .5kx^2 + 3kx$, where U is in joules, x is in meters and k is a constant. What is the force acting on the object when $x = 0$?
   (A) $-3k$ (D) k
   (B) $-k$ (E) $3k$
   (C) Zero

9. An object is dropped off a cliff of height h and is subjected to an average force of air resistance of F. If the object has a mass of m, the kinetic energy it gains during the fall will be equal to
   (A) mgh
   (B) mgh + F
   (C) mgh – F
   (D) mgh + Fh
   (E) mgh – Fh

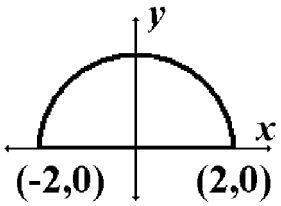
10. If a mass of 10 kg moves with the velocity $v(t) = t^2 - 2t + 1$, what is the power exerted by the force pushing the mass at $t = 2$?
   (A) 5 W
   (B) 10 W
   (C) 20 W
   (D) 30 W
   (E) 50 W

11.



A cart full of sand is rolling along a frictionless surface as a hole in the bottom of the cart allows sand to fall out. As the cart rolls and the sand falls out the speed of the cart will
   (A) increase at a constant rate.
   (B) increase at a non-constant rate.
   (C) decrease at a constant rate.
   (D) decrease at a non-constant rate.
   (E) remain the same.

12.



What is the center of mass for the semi-circle above with radius 2?
   (A) (0,0)
   (B) $(0,2/3\pi)$
   (C) (0,2/9)
   (D) $(0,4/3\pi)$
   (E) (0,4/9)

Base your answers to questions **13** and **14** on the following situation.

A railroad car of mass m is moving at a velocity v when it collides with a second railroad car of mass $2m$ at rest. The two cars lock together instantaneously and move along the track.

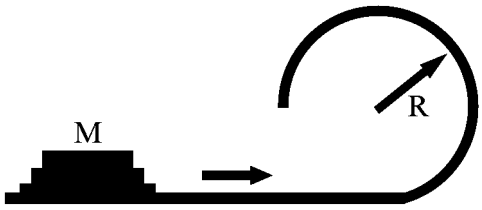
13. What is the speed of the cars immediately after the collision?
   (A) $v/2$
   (B) $v/3$
   (C) v
   (D) $2v$
   (E) $3v$

14. What is the change in kinetic energy of the cars as a result of the collision?
   (A) $\frac{mv^2}{9}$
   (B) $\frac{mv^2}{4}$
   (C) $\frac{mv^2}{3}$
   (D) $\frac{mv^2}{2}$
   (E) mv^2

---

15. Base your answer to the following question on the following information.

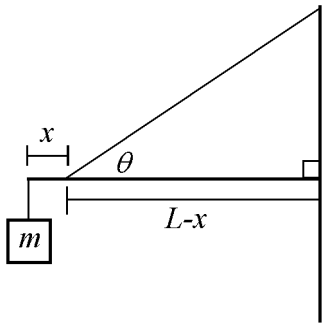
   A small block of mass M is traveling on a track where a loop of radius R exists.



What is the minimum speed the block must have to remain on the top of the track?
   (A) $v = MgR$
   (B) $v = 2gR$
   (C) $v = gR$
   (D) $v = \sqrt{gR}$
   (E) $v = \sqrt{2gR}$

16. What is the ratio of angular velocity to linear velocity?
   (A) 1
   (B) $1/r$
   (C) r
   (D) r^2
   (E) $1/r^2$

17.



The diagram above shows a massless pole of length L that supports a mass m being held horizontally against a tower by a wire that makes an angle θ with the horizontal pole. The wire is connected to the pole at a distance x from the free end of the pole. The mass is attached by a massless string at the free end of the pole. For the pole to remain horizontal, the tension in the wire must be

(A) $\frac{mgL}{2x\cos\theta}$
(B) $\frac{mgx}{2L\sin\theta}$
(C) $\frac{mgx}{2(L-x)\sin\theta}$
(D) $\frac{mgL}{2(L-x)\sin\theta}$
(E) $\frac{mgL}{2(L-x)\cos\theta}$

18. A unicycle travels at 6.0 m/s. Its wheel has an angular momentum of 300 kgm^2/s and a moment of inertia of 10 kgm^2. What is its radius?

(A) .1 m
(B) .2 m
(C) .3 m
(D) .4 m
(E) .5 m

19. Which of the following is true of the angular momentum vector?

(A) It is perpendicular to both the radius vector and the linear momentum vector.
(B) It is in the same direction as the radius vector.
(C) It is in the same direction as the linear momentum vector.
(D) It is in the same plane as both the radius vector and the linear momentum vector.
(E) Angular momentum is not a vector quantity.

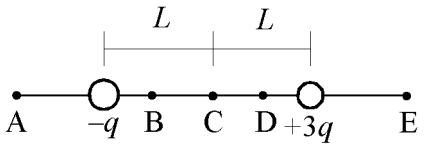
20. A planet orbits around a star which is not at the center of its orbit. The shape of the orbit is most likely

(A) circular
(B) parabolic
(C) elliptical
(D) hyperbolic
(E) spherical

21. The reciprocal of resistivity is

(A) flux
(B) electric potential
(C) current
(D) conductivity
(E) drift velocity

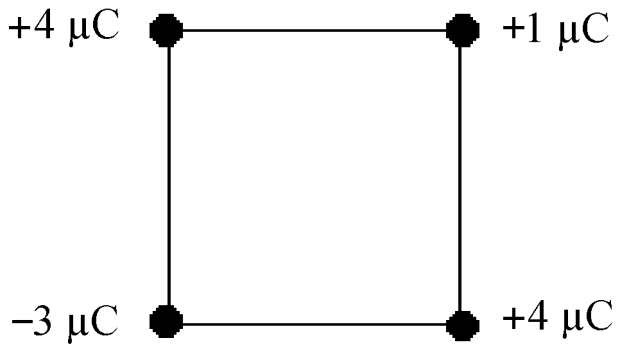
22. Base your answer on the following picture (not to scale), with charges of $-q$ and $+3q$ a distance $2L$ apart along the x-axis.



In the diagram above, at which of the points would a positive test charge most likely feel no electrostatic force?

(A) A
(B) B
(C) C
(D) D
(E) E

23.



Four point charges are placed at the corners of a square as shown in the diagram above. Each side of the square has length 2.0 m. Determine the magnitude of the electric field at the center of the square.

(A) 2×10^{-6} N/C
(B) 3×10^{-6} N/C
(C) 9×10^{3} N/C
(D) 1.8×10^{4} N/C
(E) 2.7×10^{4} N/C

Base your answers to questions **24** and **25** on the following. A point P is located 3.0 m from a point charge of –5.0 C and the point Q is located 5.0 m from the same charge.

24. What is the electric potential at point P?

(A) -1.8×10^{9}
(B) -5.0×10^{9}
(C) -5.4×10^{9}
(D) -9.0×10^{9}
(E) -15×10^{9}

25. What is the electric potential at point Q?

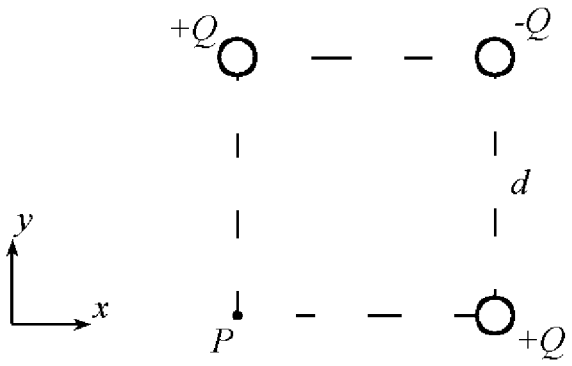
(A) -1.8×10^{9}
(B) -5.0×10^{9}
(C) -5.4×10^{9}
(D) -9.0×10^{9}
(E) -15.0×10^{9}

---

26. What is the magnetic field due to a circular loop of wire carrying a current I and having a radius R?

(A) $\mu_0 I/4\pi R$
(B) $\mu_0 I/4R$
(C) $\mu_0 I/2\pi R$
(D) $\mu_0 I/2R$
(E) $2\pi\mu_0 IR$

27. Base your answer to the following question on the diagram below, which shows three particles, with the charges shown, located at corners of a square of side length d.



What is the work required to move a small point charge $+q$ from infinity to point P?

(A) $(2-\sqrt{2}/2)\frac{kQq}{d}$

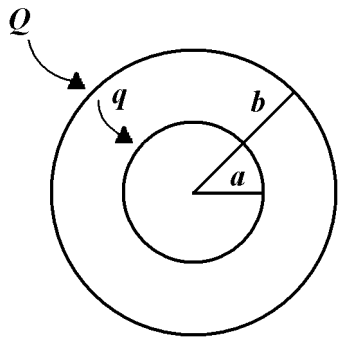
(B) $(\sqrt{2}/2-2)\frac{kQq}{d}$

(C) $(\sqrt{2}/2+2)\frac{kQq}{d}$

(D) $\frac{2kQq}{d}$

(E) $\frac{kQq}{\sqrt{2}d}$

28.



The figure above shows two concentric, conducting, thin spherical shells of radius a and b, and charge q and Q. What is the work required to bring a test charge of q_0 from the outer shell to the inner shell?

(A) $kq_0q(a\text{-}b)$

(B) $kq_0q(b\text{-}a)$

(C) $kq_0q(1/a\text{-}1/b)$

(D) $kq_0q/(b\text{-}a)^2$

(E) $kq_0q/(b\text{-}a)$

29. Which combination of units can be used to express inductance?

(A) $T\bullet m^2/A$

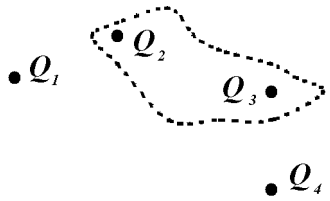
(B) $T\bullet m/A$

(C) $T^2\bullet m/A$

(D) $T\bullet m/A^2$

(E) $T^2\bullet m^2/A$

30.



The Gaussian surface above is the area enclosed by the dotted line. The net flux through the Gaussian surface depends on which of the following charges?

(A) All four

(B) Q_2 and Q_3

(C) Q_1 and Q_4

(D) Q_1 and Q_2

(E) Q_3 and Q_4

31. Which of the following pairs of charge distributions and Gaussian surfaces are correctly paired such that the Gaussian surface can be used to find the electric field associated with that charge distribution?

(A) plane and sphere

(B) plane and cylinder

(C) plane and rectangle

(D) infinite Line and rectangle

(E) infinite line and sphere

32. What is the net effect of a dielectric on the electric field of a capacitor?

(A) A shift of negative charge to the surface of the dielectric nearest to the positively charged plate and the shift of a positive charge to the surface nearest the negatively charged plate

(B) A shift of positive charge to the surface of the dielectric nearest to the positively charged plate and the shift of a negative charge to the surface nearest the negatively charged plate

(C) A shift of positive charge to the surface of the dielectric nearest to the positively charged plate and the shift of a positive charge to the surface nearest the negatively charged plate

(D) A shift of negative charge to the surface of the dielectric nearest to the positively charged plate and the shift of a negative charge to the surface nearest the negatively charged plate

(E) No shift of charge takes place

33. Which of the following does the inductance of an inductor depend on?

(A) Number of turns per length

(B) Length

(C) Radius

(D) Physical constants

(E) All of the above

34. What is the magnetic field due to a wire of infinite length carrying a current I, a distance a away from the wire?

(A) $\mu_0 I/2\pi a$

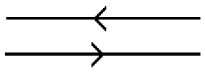
(B) $\mu_0 I/4\pi a$

(C) $\mu_0 I$

(D) $2\pi a\mu_0 I$

(E) $4\pi a\mu_0 I$

35.



Two wires carry current in opposite directions. The wires are 10 cm apart. The upper wire carries a current of 6 A and the lower wire carries a current of 4 A. Where is the magnetic field equal to zero?

(A) 30 cm above the upper wire
(B) 30 cm below the upper wire
(C) 30 cm above the lower wire
(D) 30 cm below the lower wire
(E) None of the above

36. Which of the following is not one of Maxwell's Equations?

(A) Gauss's Law for Electric Fields
(B) Gauss's Law for Magnetic Fields
(C) The Biot-Savart Law
(D) Faraday's Law
(E) The Ampere-Maxwell Law

37. The velocity of an object along a straight line is given by the equation $v(t) = 4t - 9$, where v is in m/s and t is in seconds. $x(0) = 4$.

(a) Derive an expression for the object's position
(b) Derive an expression for the object's acceleration
(c) At what time(s) does the object pass through the origin?
(d) At what time(s) does the object come to a stop?

38. A very long solenoid with length l and a radius R consists of N turns of wire and has a current of I passing through it.

(a) What is the magnetic field inside a solenoid?
(b) What is the magnetic flux through each turn of the solenoid?
(c) What is the self-inductance of the solenoid?
(d) What is the energy stored in the system?

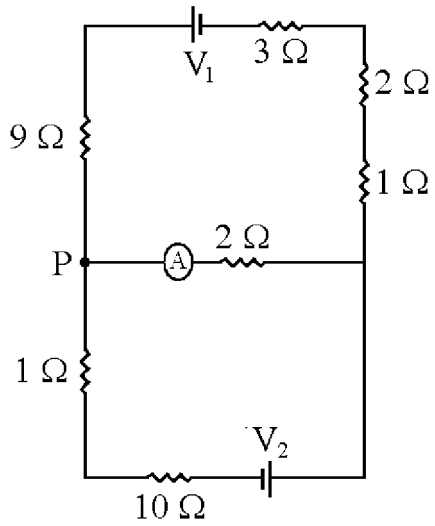
39. Which of the following is necessarily true of a system in which momentum is conserved?

(A) kinetic energy is conserved
(B) any collisions that occur are perfectly elastic
(C) any collisions that occur are perfectly inelastic
(D) no collisions occur
(E) the center of mass remains stationary

40. The potential difference due to a finite rod along the x-axis is given by the equation $V(x) = C[\ln(x + L) - \ln(x)]$, where C and L are constant. What is the electric field due to this rod?

(A) $-C/x$
(B) $-C[1/(x + L) - 1/x]$
(C) $-C/(x + L)$
(D) $-C/L$
(E) $1/(x + L) - 1/x$

41. Consider the following circuit:

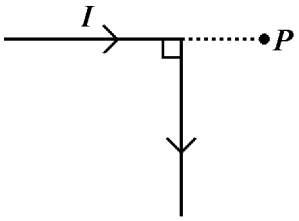


a) If the ammeter shown reads zero current, find the ratio of V_1 to V_2.

While the ammeter still reads zero current, V_1 is found to be 45 V. Determine the following:

b) The current in the 10 Ω resistor.
c) The potential at point P.
d) The energy dissipated by the entire circuit in one minute.

42.



What is the magnitude and direction of the magnetic field at point P due to the segment of wire carrying current I?

(A) $\mu_0 I/2\pi d$ out of the page
(B) $\mu_0 I/2\pi d$ into the page
(C) $\mu_0 I/4\pi d$ out of the page
(D) $\mu_0 I/4\pi d$ into the page
(E) $\mu_0 I/d$ out of the page

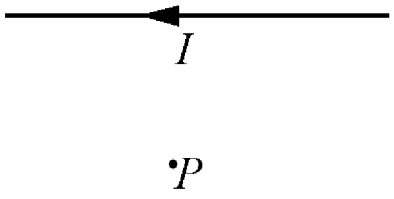
43. The potential of a point-charge is given by the equation $V(r) = kq/r$. Determine the electric field at some distance r from q.

(A) $-kq/r^2$
(B) kq/r^2
(C) kqr
(D) $-kqr$
(E) $-kq/r$

44. The negative value of the derivative of electric potential with respect to radius is equal to

(A) charge
(B) electric Force
(C) electric Field
(D) capacitance
(E) potential Energy

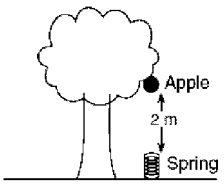
45.



What is the magnitude and direction of the magnetic field at point P due to the segment of wire above carrying current *I*?

(A) $\mu_0 I/2\pi d$ out of the page
(B) $\mu_0 I/2\pi d$ into the page
(C) $\mu_0 I/4\pi d$ out of the page
(D) $\mu_0 I/4\pi d$ into the page
(E) $\mu_0 I/d$ out of the page

46.



An apple of mass *m* falls from a branch that it 2 m directly above a spring with constant *k*.

(a) What is the velocity of the apple when it first hits the spring?
(b) What is the maximum displacement of the spring?
(c) Assuming the spring is ideal, if the apple does not attach to the spring, how high above the spring will the apple reach?
(d) How long does it take to reach this height from the time it leaves the spring?
(e) Assuming the apple remained attached to the spring, what is the period of motion of the apple-spring system?

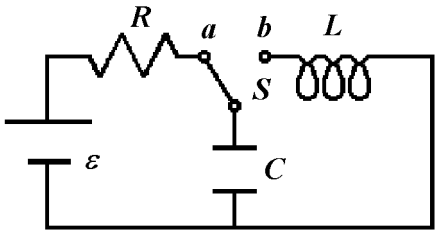
47. Base your answer to the following question on the information and diagram below.

Two stationary carts of mass A and B at positions *a* and *b* on the x-axis.

What is the expression for x-coordinate of the center of mass of this system?

(A) $(Aa + Bb)/(A + B)$
(B) $(A + B)/(Aa + Bb)$
(C) $(Ab + Ba)/(A + B)$
(D) $(Aa + Bb)/(b - a)$
(E) $(A + B)/(b - a)$

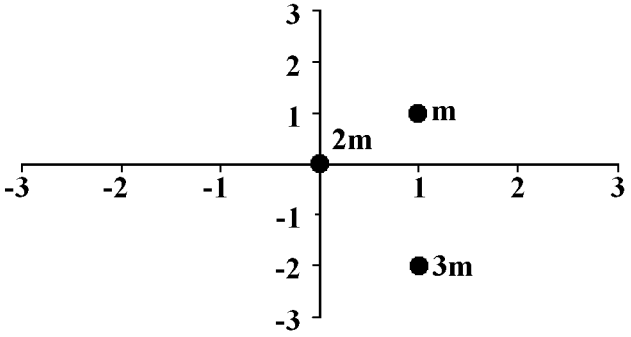
48.



In the above circuit, the switch has been in position a for a long time and is moved to position b at time t=0.

(a) What is the frequency of oscillation?
(b) What is the maximum charge on the capacitor?
(c) What is the maximum current in the inductor?
(d) What is the total energy in the circuit at any time?

49.



Find the center of mass for the system above.

(A) (0,0)
(B) (2/3, -5/6)
(C) (2/3, 0)
(D) (2/3, 5/6)
(E) (1,0)

50. Dielectrics are

(A) materials that do not allow free motion of charges placed on them
(B) materials that allow free motion of charges placed on them
(C) materials that do not allow motion of charges within the molecules from which they are made
(D) materials that produce an electric field to increase the applied electric field
(E) materials that decrease the capacitance of a capacitor

Answer Key

1. D
2. E
3. E
4. C
5. B
6. E
7. C
8. A
9. E
10. C
11. B
12. D
13. B
14. C
15. D
16. B
17. D
18. B
19. A
20. C
21. D
22. A
23. D
24. E
25. D
26. D
27. A
28. C
29. A
30. B
31. B
32. A
33. E
34. A
35. B
36. C
37. (a) $x(t) = 2t^2 - 9t + 4$
(b) $a(t) = 4$
(c) .5 s and 4 s
(d) 2.25 s
38. (a) $\mu_0 \frac{n}{l} I$
(b) $\mu_0 \frac{n}{l} I \pi R^2$
(c) $\frac{\mu_0 n^2 \pi R^2}{l}$
(d) $\frac{\mu_0 n^2 \pi R^2 I^2}{2l}$
39. E
40. B
41. a) 15:11 b) 3A c) 18 V d) 14,040 J
42. C
43. A
44. C
45. C
46. (a) $2(g)^{1/2}$, downward
(b) $2(mg/k)^{1/2}$
(c) 2 m
(d) $2/(g)^{1/2}$
(e) $2\pi(m/k)^{1/2}$
47. A
48. (a) $1/(2\pi\sqrt{LC})$
(b) $C\varepsilon$
(c) $V(\sqrt{C/L})$
(d) $.5C\varepsilon 2$
49. B
50. A

Eduware Genealogy by Question

Displaying UNIT CHAPTER TOPIC SUBTOPIC QUESTION ID

1. I. NEWTONIAN MECHANICS / A. Kinematics / 1. One-Dimensional Motion / a. Graphs of motion : 0000008
2. I. NEWTONIAN MECHANICS / A. Kinematics / 1. One-Dimensional Motion / a. Graphs of motion : 0000009
3. I. NEWTONIAN MECHANICS / A. Kinematics / 1. One-Dimensional Motion / a. Graphs of motion : 0000010
4. I. NEWTONIAN MECHANICS / B. Newton's Laws / 4. Friction / b. Kinetic friction : 0001802
5. I. NEWTONIAN MECHANICS / A. Kinematics / 1. One-Dimensional Motion / b. Questions without graphs : 0000940
6. I. NEWTONIAN MECHANICS / B. Newton's Laws / 2. Dynamics (Second Law) / c. Other dynamics problems : 0000680
7. I. NEWTONIAN MECHANICS / C. Work, Energy, and Power / 1. Work and Kinetic Energy / a. W = F·d : 0000588
8. I. NEWTONIAN MECHANICS / C. Work, Energy, and Power / 1. Work and Kinetic Energy / c. Work and energy with calculus [C] : 0001450
9. I. NEWTONIAN MECHANICS / C. Work, Energy, and Power / 3. Conservation of Energy / b. Work done against friction : 0000715
10. I. NEWTONIAN MECHANICS / C. Work, Energy, and Power / 4. Power / c. Power with calculus [C] : 0002022
11. I. NEWTONIAN MECHANICS / D. Linear Momentum / 2. One-Dimension / a. Elastic collisions : 0001160
12. I. NEWTONIAN MECHANICS / D. Linear Momentum / 5. Center of Mass [C] / a.Center of mass : 0001632
13. I. NEWTONIAN MECHANICS / D. Linear Momentum / 2. One-Dimension / b. Inelastic collisions : 0001158
14. I. NEWTONIAN MECHANICS / D. Linear Momentum / 2. One-Dimension / b. Inelastic collisions : 0001159
15. I. NEWTONIAN MECHANICS / E. Circular Motion and Rotations / 1. Uniform Circular Motion / c. Tangential quantities : 0000578
16. I. NEWTONIAN MECHANICS / E. Circular Motion and Rotations / 3. Rotational Kinematics and Dynamics [C] / a. Rotational motion : 0002029
17. I. NEWTONIAN MECHANICS / E. Circular Motion and Rotations / 2. Rotational Statics / a. Torque : 0000740
18. I. NEWTONIAN MECHANICS / E. Circular Motion and Rotations / 4. Angular Momentum and its Conservation [C] / a. Angular momentum : 0001640
19. I. NEWTONIAN MECHANICS / E. Circular Motion and Rotations / 4. Angular Momentum and its Conservation [C] / a. Angular momentum : 0001952
20. I. NEWTONIAN MECHANICS / F. Oscillations and Gravitation / 3. Gravitation / c. General orbits [C] : 0002093
21. III. ELECTRICITY AND MAGNETISM / C. Electric Circuits / 1. Current / b. Current density and drift velocity [C] : 0001609
22. III. ELECTRICITY AND MAGNETISM / A. Electrostatics / 1. Coulomb's law / a. Force between charges : 0000775
23. III. ELECTRICITY AND MAGNETISM / A. Electrostatics / 1. Coulomb's law / b. Electric fields : 0000667
24. III. ELECTRICITY AND MAGNETISM / A. Electrostatics / 2. Electrostatic Potential / a. Calculating potential : 0000131
25. III. ELECTRICITY AND MAGNETISM / A. Electrostatics / 2. Electrostatic Potential / a. Calculating potential : 0000132
26. III. ELECTRICITY AND MAGNETISM / D. Magnetostatics / 3. Biot-Savart and Ampere's Laws [C] / a. The Biot-Savart Law : 0001529
27. III. ELECTRICITY AND MAGNETISM / A. Electrostatics / 2. Electrostatic Potential / b. Work and energy : 0001334
28. III. ELECTRICITY AND MAGNETISM / A. Electrostatics / 2. Electrostatic Potential / c. Spherical and cylindrical charge distributions[C] : 0001509
29. III. ELECTRICITY AND MAGNETISM / E. Electromagnetism / 3. Inductance [C] / a. RL circuits : 0001532
30. III. ELECTRICITY AND MAGNETISM / A. Electrostatics / 3. Gauss's law [C] / a. Gauss's law : 0001503
31. III. ELECTRICITY AND MAGNETISM / A. Electrostatics / 3. Gauss's law [C] / a. Gauss's law : 0002109
32. III. ELECTRICITY AND MAGNETISM / B. Conductors, Capacitors, and Resistors / 4. Dielectrics [C] / a. Dielectrics : 0001601
33. III. ELECTRICITY AND MAGNETISM / E. Electromagnetism / 3. Inductance [C] / a. RL circuits : 0001552
34. III. ELECTRICITY AND MAGNETISM / D. Magnetostatics / 3. Biot-Savart and Ampere's Laws [C] / a. The Biot-Savart Law : 0001528
35. III. ELECTRICITY AND MAGNETISM / D. Magnetostatics / 3. Biot-Savart and Ampere's Laws [C] / b. Ampere's Law : 0001620
36. III. ELECTRICITY AND MAGNETISM / E. Electromagnetism / 4. Maxwell's Equations [C] / a. Maxwell's equations : 0001535
37. I. NEWTONIAN MECHANICS / A. Kinematics / 3. Free Response Questions / b. Free Response Questions [C] : 0001655
38. III. ELECTRICITY AND MAGNETISM / E. Electromagnetism / 5. Free Response Questions / b. Free Response Questions [C] : 0001684
39. I. NEWTONIAN MECHANICS / D. Linear Momentum / 5. Center of Mass [C] / a.Center of mass : 0001962
40. III. ELECTRICITY AND MAGNETISM / A. Electrostatics / 2. Electrostatic Potential / d. Deriving E from V [C] : 0001621
41. III. ELECTRICITY AND MAGNETISM / C. Electric Circuits / 6. Free Response Questions / a. Free Response Questions : 0000833
42. III. ELECTRICITY AND MAGNETISM / D. Magnetostatics / 3. Biot-Savart and Ampere's Laws [C] / a. The Biot-Savart Law : 0001611
43. III. ELECTRICITY AND MAGNETISM / A. Electrostatics / 2. Electrostatic Potential / d. Deriving E from V [C] : 0001588
44. III. ELECTRICITY AND MAGNETISM / A. Electrostatics / 2. Electrostatic Potential / d. Deriving E from V [C] : 0001510
45. III. ELECTRICITY AND MAGNETISM / D. Magnetostatics / 3. Biot-Savart and Ampere's Laws [C] / a. The Biot-Savart Law : 0001610
46. I. NEWTONIAN MECHANICS / F. Oscillations and Gravitation / 4. Free Response Questions / b. Free Response Questions [C] : 0002100
47. I. NEWTONIAN MECHANICS / D. Linear Momentum / 5. Center of Mass [C] / a.Center of mass : 0002133
48. III. ELECTRICITY AND MAGNETISM / E. Electromagnetism / 5. Free Response Questions / b. Free Response Questions [C] : 0001688
49. I. NEWTONIAN MECHANICS / D. Linear Momentum / 5. Center of Mass [C] / a.Center of mass : 0001456
50. III. ELECTRICITY AND MAGNETISM / B. Conductors, Capacitors, and Resistors / 4. Dielectrics [C] / a. Dielectrics : 0001600

Eduware Genealogy by Category

3: I. NEWTONIAN MECHANICS\A. Kinematics\1. One-Dimensional Motion\a. Graphs of motion - (1, 2, 3)
1: I. NEWTONIAN MECHANICS\A. Kinematics\1. One-Dimensional Motion\b. Questions without graphs - (5)
1: I. NEWTONIAN MECHANICS\B. Newton's Laws\2. Dynamics (Second Law)\c. Other dynamics problems - (6)
1: I. NEWTONIAN MECHANICS\A. Kinematics\3. Free Response Questions\b. Free Response Questions [C] - (37)
1: I. NEWTONIAN MECHANICS\B. Newton's Laws\4. Friction\b. Kinetic friction - (4)
1: I. NEWTONIAN MECHANICS\C. Work, Energy, and Power\1. Work and Kinetic Energy\a. W = F·d - (7)
1: I. NEWTONIAN MECHANICS\C. Work, Energy, and Power\1. Work and Kinetic Energy\c. Work and energy with calculus [C] - (8)
1: I. NEWTONIAN MECHANICS\C. Work, Energy, and Power\3. Conservation of Energy\b. Work done against friction - (9)
1: I. NEWTONIAN MECHANICS\C. Work, Energy, and Power\4. Power\c. Power with calculus [C] - (10)
2: I. NEWTONIAN MECHANICS\D. Linear Momentum\2. One-Dimension\b. Inelastic collisions - (13, 14)
1: I. NEWTONIAN MECHANICS\D. Linear Momentum\2. One-Dimension\a. Elastic collisions - (11)
4: I. NEWTONIAN MECHANICS\D. Linear Momentum\5. Center of Mass [C]\a.Center of mass - (12, 39, 47, 49)
1: I. NEWTONIAN MECHANICS\E. Circular Motion and Rotations\2. Rotational Statics\a. Torque - (17)
1: I. NEWTONIAN MECHANICS\E. Circular Motion and Rotations\1. Uniform Circular Motion\c. Tangential quantities - (15)
1: I. NEWTONIAN MECHANICS\E. Circular Motion and Rotations\3. Rotational Kinematics and Dynamics [C]\a. Rotational motion - (16)
2: I. NEWTONIAN MECHANICS\E. Circular Motion and Rotations\4. Angular Momentum and its Conservation [\a. Angular momentum - (18, 19)
1: I. NEWTONIAN MECHANICS\F. Oscillations and Gravitation\3. Gravitation\c. General orbits [C] - (20)
1: I. NEWTONIAN MECHANICS\F. Oscillations and Gravitation\4. Free Response Questions\b. Free Response Questions [C] - (46)
1: III. ELECTRICITY AND MAGNETISM\A. Electrostatics\1. Coulomb's law\a. Force between charges - (22)
1: III. ELECTRICITY AND MAGNETISM\A. Electrostatics\1. Coulomb's law\b. Electric fields - (23)
1: III. ELECTRICITY AND MAGNETISM\A. Electrostatics\2. Electrostatic Potential\b. Work and energy - (27)
1: III. ELECTRICITY AND MAGNETISM\A. Electrostatics\2. Electrostatic Potential\c. Spherical and cylindrical charge distri - (28)
2: III. ELECTRICITY AND MAGNETISM\A. Electrostatics\3. Gauss's law [C]\a. Gauss's law - (30, 31)
4: III. ELECTRICITY AND MAGNETISM\D. Magnetostatics\3. Biot-Savart and Ampere's Laws [C]\a. The Biot-Savart Law - (26, 34, 42, 45)
2: III. ELECTRICITY AND MAGNETISM\B. Conductors, Capacitors, and Resistors\4. Dielectrics [C]\a. Dielectrics - (32, 50)
1: III. ELECTRICITY AND MAGNETISM\D. Magnetostatics\3. Biot-Savart and Ampere's Laws [C]\b. Ampere's Law - (35)
1: III. ELECTRICITY AND MAGNETISM\C. Electric Circuits\1. Current\b. Current density and drift velocity [C] - (21)
2: III. ELECTRICITY AND MAGNETISM\E. Electromagnetism\3. Inductance [C]\a. RL circuits - (29, 33)
3: III. ELECTRICITY AND MAGNETISM\A. Electrostatics\2. Electrostatic Potential\d. Deriving E from V [C] - (40, 43, 44)
1: III. ELECTRICITY AND MAGNETISM\E. Electromagnetism\4. Maxwell's Equations [C]\a. Maxwell's equations - (36)
1: III. ELECTRICITY AND MAGNETISM\C. Electric Circuits\6. Free Response Questions\a. Free Response Questions - (41)
2: III. ELECTRICITY AND MAGNETISM\A. Electrostatics\2. Electrostatic Potential\a. Calculating potential - (24, 25)
2: III. ELECTRICITY AND MAGNETISM\E. Electromagnetism\5. Free Response Questions\b. Free Response Questions [C] - (38, 48)

AP Physics C Sample Exam

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