

**PHYSICS FOR
REMEDIAL
PRACTICE
QUESTIONS
From Chapter 6-10**

READ CAREFULLY EACH MULTIPLE-CHOICE QUESTION AND SELECT ONE CORRECT ANSWER FROM THE CORRESPONDING CHOICES.

1. If the internal energy of the system decreases, then what can be concluded about the heat and the work done?

- A. Heat is added to the system and work is done by the system
- B. Heat is removed from the system and work is done by the system
- C. Heat is removed from the system and work is done on the system
- D. Heat is added to the system and work is done on the system

2. If a thermodynamic system undergoes a process in which its internal energy increased by 400J while doing 200J of work on its surrounding, then what is the energy absorbed in or extracted from it in the form of heat?

- A. -600J
- B. -200J
- C. 600J
- D. 200J

3. Which the following statement is NOT correct?

- A. The spontaneous transfer of energy from a cooler body to hotter body is quite possible
- B. A system can absorb heat from a hot reservoir and can convert it entirely into work.
- C. No process is possible in which there is an overall decrease in the entropy of the universe
- D. The complete conversion of energy from hot source into work is not possible

4. Which of the following statement is correct?

- A. Irreversible process is a process that can be reversed though finite change in the system
- B. Complete conversion of energy from a hot source into work is possible
- C. There are processes in which there is an overall decrease in entropy

D. Entropy is a measure of the disorder of a system

5. A heat engine is being designed to have a Carnot efficiency of 65.0% when operating between two energy reservoirs. If the temperature of the cold reservoir is 20.0°C , what must be the temperature of the hot reservoir?

A. 57°C

C. 564°C

B. 310°C

D. 807°C

6. Which statement is NOT among the assumptions made in the kinetic theory of gases?

A. There is no interaction between particles or between particles and the wall except during collision.

B. Collisions between particles and between particles and walls are perfectly elastic.

C. The distribution of velocities of particles is uniform

D. The volume occupied by the particle is negligible compared to the volume of the whole gas

7. A cup of coffee at a temperature of 80°C is placed on a table in a 20°C room. What happens to the thermal energy and molecular motion of the coffee when it is left on the table?

A. The thermal energy decreases and the molecules move more slowly

B. The thermal energy increases and the molecules move more slowly

C. The thermal energy decreases and the molecules move faster

D. The thermal energy increases and the molecules

8. What does a curve drawn between two points on P-V diagram represent?

A. The state of the system

C. Work done in a cyclic process

B. A thermodynamic process

D. Work done on or by the system

9. The temperature of a gas is due to

A. The kinetic energy of the molecules

B. The attractive force between the molecules

C. The potential energy of the molecules

D. The repulsive force the molecules

10. The direction of heat flow in conduction method is forced:

A. high pressure to low pressure

B. a point of higher emissivity to lower one

C. high density to low density

D. high temperature to low temperature

11. A heat engine operating at maximum efficiency has an efficiency of 25%. The temperature of the cold reservoir is 300 K. What is the temperature of the hot reservoir?

A. 500 K

C. 350 K

B. 450 K

D. 400 K

12. The point in the phase diagram where the fusion curve, the vapor pressure curve, and the sublimation curve join is called the

A. boiling point.

C. critical point.

B. triple point.

D. melting point.

13. The number of joules of heat energy required to raise the temperature of a body by

1 K is:

- A. Heat capacity
- B. expansion coefficient
- C. Specific heat capacity
- D. calorific value

14. Two bodies that are separately in thermal equilibrium with third body must be in

thermal equilibrium with each other. This statement is a statement of:

- A. The first law of thermodynamics.
- B. The second law of thermodynamics.
- C. The zeroth law of thermodynamics.
- D. The third law of thermodynamics

15. In the adiabatic process of thermodynamics:

- A. heat can be transferred in to the system but not out of the system
- B. heat is transferred neither into nor out of the system
- C. heat can be transferred out of the system but not in to the system
- D. heat transfer is possible in to and out of the system

=====OSCILLATION AND WAVES=====

16. Which of the following statement is correct for a simple harmonic motion?

- A. The acceleration of the motion is directly proportional to the velocity
- B. The velocity of the motion is directly proportional to the displacement
- C. The acceleration of the motion is directly proportional in magnitude but opposite in direction to the displacement
- D. The velocity of the motion is inversely proportional to the displacement

17. Which one of the following is NOT the use of Doppler Effect?

- A. Energy transmission
- B. blood flow measurement
- C. Radar
- D. Astronomy

18. Which of the following is NOT correct about a simple harmonic oscillator?

- A. Total mechanical energy is conserved
- B. The acceleration is directly proportional to and opposite in direction to displacement
- C. The period of small oscillation of a pendulum with string length l , a bob mass m attached to it is $T = 2\pi \sqrt{\frac{l}{g}}$
- D. The frequency of an oscillating mass attached to a massless spring is independent of the spring constant

19. Which of the following indicates the wavelength of a travelling wave?

- A. The distance between an adjacent trough and a peak
- B. The amplitude of the wave
- C. The distance between a node and antinodes
- D. The distance between two adjacent points which are in phase

20. The total energy of a particle executing simple harmonic motion is

- A. Zero
- B. Directly proportional to the square of the amplitude
- C. Directly proportional to the amplitude
- D. Inversely proportional to the square of the amplitude

21. A transverse sinusoidal wave is traveling on a string. Which statement is correct about a point on the string?

- A. The point moves in the same direction as the wave.

- B. The point moves in simple harmonic motion with a different frequency than that of the wave.
- C. The point moves in simple harmonic motion with the same angular frequency as the wave.
- D. The point moves in uniform circular motion with a different angular speed than the wave.

22. An object of mass M is hung from a spring and set into oscillation. The frequency of the oscillation is measured and recorded as f . If the object of mass M is replaced with an object of mass $2M$ and set into oscillation, what will be the frequency of the motion?

- A. $f/\sqrt{2}$
- B. f
- C. $\sqrt{2}f$
- D. $2f$

23. The period of oscillation of a particle undergoing simple harmonic motion is :

- A. Independent of the amplitude of the motion
- B. Directly proportional to the frequency of oscillation
- C. Independent of the frequency of oscillation
- D. Directly proportional to mass of oscillating object

24. A mass suspended from the end of a spring vibrates up and down 24 times in 36s. What are the frequency and period of the vibration?

- A. 1.5 Hz, 0.67s
- B. 0.67Hz, 1.5s
- C. 0.0012 Hz, 864 s
- D. 864 Hz, 0.0012 s

25. Which one of the following is not an example of simple harmonic motion?

- A. A mass attached to a spring system oscillating in horizontal direction to the surface of the Earth
- B. Rotation of second pointer in hand watch
- C. Oscillation of simple pendulum
- D. A mass attached to a spring system oscillating in vertical direction to the surface of the Earth

26. An observer is moving towards a stationary source of frequency 250 Hz with a velocity of 40 m /s. If the velocity of sound is 330 m /s, the apparent frequency heard by the observer will be;

- A. 300 Hz
- B. 280 Hz
- C. 260 Hz
- D. 320 Hz

27. For an object performing SHM the magnitude of maximum velocity is given by

- A. $\omega \sqrt{(A^2 - x^2)}$
- B. $\omega \sqrt{(x^2 - A^2)}$
- C. ωA
- D. $\omega^2 A$

28. When sound travels through air, the air particles _____.

- A. vibrate along the direction of wave propagation
- B. vibrate but not in any fixed direction
- C. vibrate perpendicular to the direction of wave propagation
- D. do not vibrate

=====ELECTROSTATICS=====

29. Suppose that three point charges are placed along a straight line and the electrostatic force on the middle charge is zero. What can we concluded about the charges?

- A. The charge at the ends must have the same sign
- B. The signs of the three charges should be the same
- C. The middle charge should be placed at the center between the two charges
- D. The charge at the middle and at the left end should have the same sign

30. A capacitor of $12\mu\text{F}$ capacitance can be charged after it is connected between potential differences of 9V. How much electrical energy is used in charging the capacitor?

- A. $1 \times 10^{-3}\text{J}$
- B. $54 \times 10^{-4}\text{J}$
- C. $4.86 \times 10^{-4}\text{J}$
- D. $9.72 \times 10^{-4}\text{J}$

31. The capacitance of a parallel plate capacitor is $10\mu\text{F}$. If the distance b/n the plates is halved, keeping all other quantities constant, then what is the new capacitance of the capacitor?

- A. $0.2\mu\text{F}$
- B. $5\mu\text{F}$
- C. $10\mu\text{F}$
- D. $20\mu\text{F}$

32. Two positive charges of magnitude $2.4 \times 10^{-9}\text{C}$ and $1.6 \times 10^{-9}\text{C}$ are separated in air by a distance of 2cm. How much electrostatic potential is produced by the two charges at midway b/n them?

- A. 3.6KV
- B. 0.72KV

C. 2.16KV

D. 1.44KV

33. Three capacitors of capacitance $8\mu\text{F}$, $12\mu\text{F}$, and $24\mu\text{F}$ are connected first in series and then in parallel. The equivalent capacitance in case series and parallel are respectively,

A. $0.25\mu\text{F}$, $34.00\mu\text{F}$ C. $0.25\mu\text{F}$, $44.00\mu\text{F}$ B. $4.00\mu\text{F}$, $34.00\mu\text{F}$ D. $4.00\mu\text{F}$, $44.00\mu\text{F}$

34. Two capacitors, $1\mu\text{F}$ and $3\mu\text{F}$, are connected in a parallel across a 300V potential difference. What is the total energy in joules stored in the capacitors?

A. 0.27 J C. 0.32 J B. 0.18 J D. 0.41 J

35. Two points charges Q_1 and Q_2 having positive sign are placed on the x axis. They are separated by a distance of a and $Q_1 = 4Q_2$. at what distance on the x axis b/n the charges & measured from charge Q_1 will the electric field vanishes?

A. $2a$ C. $a/3$ B. $2a/3$ D. $a \& c$

36. If the Coulomb force b/n two like charges Q_1 and Q_2 separated by a distance r is equal to F_0 , what would be the new force of repulsion if the magnitude of the charges Q_1 is doubled and that of Q_2 is halved?

A. $F_0/3$ C. F_0 B. $F_0/2$ D. $2F_0$

37. What is the SI-unit of electric field?

A. Am^{-1} C. NC^{-1} B. Vm^{-1} D. Cm

38. What is electric potential energy of a system of 4 point charges, each charge q located at the corners of a square of side a ?

A. $\frac{\sqrt{2} kq}{a} (2\sqrt{2} + 1)$

C. $\frac{\sqrt{2} kq^2}{a} (2\sqrt{2} + 1)$

B. $\frac{\sqrt{2} kq^2}{a} (2\sqrt{2} - 1)$

D. $\frac{\sqrt{2} kq}{a} (2\sqrt{2} - 1)$

39. Why is it logical to say that the potential of a ground object is zero?

- A. the earth is an insulator
- B. the net charge on earth is practically zero
- C. a grounded object can neither give nor take charge from the earth
- D. a grounded object can neither is at a higher potential than the earth

40. Two negative point charges are 2 m apart and repel each other with a force of 2N.

When the distance between the charges is doubled, the force between them is

- A. One fourth as great
- B. One-half as great
- C. Twice as great
- D. Four times as great

41. Which of the following is not property of a conductor in electrostatic equilibrium?

- A. The electric field is zero everywhere inside the conductor
- B. Any net charge on the conductor resides entirely on its surface
- C. The surface charge density is greatest where the radius of curvature of the surface is the smallest.
- D. The electric field just outside the conductor is tangent to its surface

42. Coulomb's law for the force between electric charges most closely resembles

- A. The law of conservation of energy
- B. Newton's law of gravitation

C. Newton's second law of motion

D. The law of conservation of mass

43. What is the magnitude of the electric force between two protons separated by

$2 \times 10^{-15} \text{ m}$?

A. 67.5N

C. 57.5N

B. 115.0N

D. 83.4N

44. Moving $2.5 \times 10^{-6} \text{ C}$ of charge from point A to point B in an electric field requires $6.3 \times 10^{-4} \text{ J}$ of work. The potential difference between points A and B is

approximately

A. $4.0 \times 10^3 \text{ V}$

C. $1.6 \times 10^9 \text{ V}$

B. $2.5 \times 10^2 \text{ V}$

D. $1.0 \times 10^{-14} \text{ V}$

45. The distance between two point charges is doubled. What will happen to the force of interaction between the charges?

A. The force will be doubled.

B. The force will be reduced by a factor four times.

C. The force will be reduced by half.

D. The force will not be affected.

46. A sheet of polythene ($\epsilon_r = 2.3$) and 0.25 mm thick is to be used in a capacitor by sandwiching it between two sheets of aluminum foil. What area must the sheets have if the capacitor is to have a capacitance of $0.5 \mu\text{F}$?

A. 12 m^2

C. 6.14 m^2

B. 0.6 m^2

D. 0.12 m^2

47. Two equal and opposite charges are located along X-axis at -2.0 cm and $+2.0\text{ cm}$ as shown in the figure below. How much would be the electric potential at the origin?

- A. 1.8 MV C. Zero
B. 3.6 MV D. 4.5 MV

48. When two capacitors are connected in parallel, the effective capacitance is $4\mu\text{F}$. If the same capacitors are connected in series; the effective capacitance is one-fourth the capacitance of one of the two capacitors. What is the capacitance of the two capacitors?

- A. $3\mu\text{F}$ and $4\mu\text{F}$ C. $1\mu\text{F}$ and $4\mu\text{F}$
B. $1\mu\text{F}$ and $3\mu\text{F}$ D. $2\mu\text{F}$ and $2\mu\text{F}$

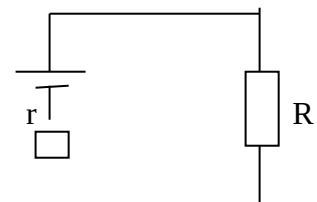
49. A dielectric is inserted into a capacitor while the charge on it is kept constant. What happens to the potential difference and the stored energy?

- A. The potential difference decreases and the stored energy increases
B. Both the potential difference and the stored energy increase
C. The potential difference increases and the stored energy decreases
D. Both the potential difference and the stored energy decreases

===== CURRENT AND CIRCUIT=====

50. Which of the following is NOT correct about the circuit shown below?

- A. Voltage across R is $\frac{R}{r+R} \mathcal{E}$
B. Current flowing through R is $\frac{\mathcal{E}}{r+R}$



C. Current flowing through r is $\frac{r}{r+R} \in$

D. Power drop in R is $\frac{R}{(r+R)^2} \in^2$

51. If a cell supplies a current of 0.9A when connected to a 2Ω resistor and a current of 0.3A, then what will be the internal resistance of the cell when connected to a 7Ω resistor? **Check it**

A. 2Ω

C. 1Ω

B. 1.2Ω

D. 0.5Ω

52. Household light bulbs are normally connected in parallel to a power supply.

Suppose a 40W and a 60W light bulbs are, instead, connected in series. Which bulb is brighter? **Check**

A. The 60W bulb

B. The bulbs are equally bright

C. The 40W bulb

D. The bulbs will not give light in series connection

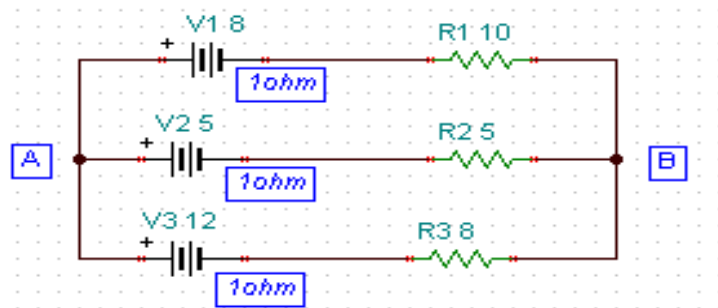
53. Determine the current in the 5Ω resistor in the figures shown below **Check it**

A. 7.85 A

B. 1.09 A

C. 0.48 A

D. 0.18 A



54. A cell supplies a current of 0.9 A through a 2Ω resistor and a current of 0.3 A through a 7Ω resistor. The internal resistance of the cell is?

A. 0.5Ω

B. 1.0Ω

C. 1.2Ω D. 2.0Ω

55. A rod is made of two materials connected to each other. Each conductor has a square cross – section of 3mm on a side. The first material has resistivity of $\rho_1 = 4 \times 10^{-3} \Omega \text{ m}$ and is 25cm long while the second material has resistivity of $\rho_2 = 6 \times 10^{-3} \Omega \text{ m}$ and is 40cm long. What is the resistance between the ends of the rod?

A. 378Ω C. 436Ω B. 267Ω D. 363Ω

56. The maximum power delivered to the load resistance R occurs when the load resistance R and internal resistance r have the following relation:

A. $r = 2R$ C. $r = 3R$ B. $r = R$ D. $r = 7R$

57. A galvanometer many as used as an ammeter by

A. Shunting the galvanometer with a high resistance

B. Connecting a high resistance in series

C. Connecting a low resistance in parallel with the galvanometer

D. Connecting a high resistance in series

58. Wire B has twice the length and twice the radius of wire A. Both wires are made from the same material. If V wire A has a resistance R, what is the resistance of Wire B?

A. $4R$ C. $R/2$ B. $2R$ D. $R/4$

59. If the terminals of a battery with Zero internal resistance are connected across two identical resistors in series, the total power delivered by the battery is 8 W. If the

same battery is connected across the same resistors in parallel, what is the total power received by the battery?

A. 2W

C. 16W

B. 4W

D. 32W

60. If a piece of aluminum is cooled from room temperature to 80K, then the resistance of the piece?

A. Increase

B. Decrease

C. Remain the same.

D. It is not possible to tell, as all material do not show the same electrical characteristics upon cooling.

61. A copper wire is stretched so that its length increases & its diameter decreases as a result its

A. resistance decreased & its resistivity remains the same

B. resistivity decrease & its resistance remains the same

C. resistance increase & its resistivity remains the same

D. resistivity increase & its resistance remains the same

62. The terminal voltage of a cell supplying energy to a circuit is usually less than its emf because of the cell's

A. Size

C. mass

B. Internal resistance

D. Energy

63. Which of the following statement is NOT TRUE?

- A. Any device such as battery or generator can be considered as source of emf
- B. The terminal voltage can be equal to emf in real system
- C. Emf forces electrons move in a direction opposite to the electrostatic force
- D. Emf can be defined as work done per unit charge

64. Two resistors connected in series have an equivalent resistance of $7\ \Omega$. When they are connected in parallel, their equivalent resistance is $2\ \Omega$. What is the resistance of each resistor?

- | | |
|----------------------------------|-------------------------------|
| A. $5.5\ \Omega$, $1.5\ \Omega$ | C. $.6\ \Omega$, $1\ \Omega$ |
| B. $5\ \Omega$, $2\ \Omega$ | D. $4\ \Omega$, $3\ \Omega$ |

65. The current in the $16\ \Omega$ resistor is:-

- A. 0.64A
- B. 0.15 A
- C. 0.49 A
- D. 1.28A

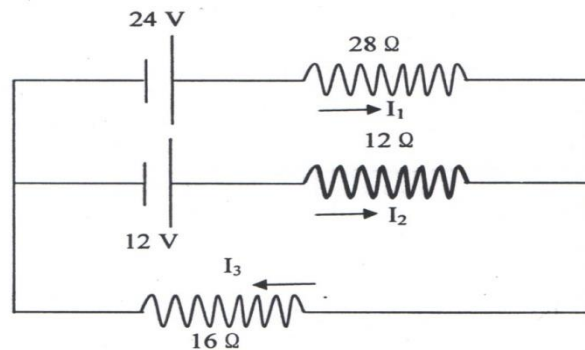
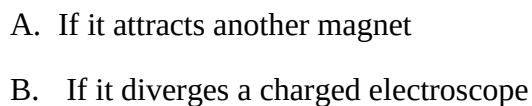


Fig. 8

66. The statement of Kirchhoff's point rule follows from:

- A. dependence of resistance on temperature
- B. conservation of energy
- C. Ohm's law
- D. conservation of charge



C. There is no single and sure way to determine its magnetization

D. If it repels another magnet

71. Two parallel wires each carrying 5A current in the same direction are separated by 2.5cm. What is the magnitude of the force per unit length acting on the wires?

A. 4×10^{-6} N/m, repulsive

C. 8×10^{-5} N/m, repulsive

B. 2×10^{-4} N/m, attractive

D. 5×10^{-6} N/m attractive

72. A positive charged particle of charge $q = 3.2 \times 10^{-19}$ C is moving parallel to x- axis with speed of 1000m/s a magnetic field of 0.5T parallel to y- axis as shown in the diagram below. What is the magnetic force on the charge

A. 8×10^{-16} N

C. 8×10^{-17} N

B. 3.2×10^{-16} N

D. 1.6×10^{-16} N

73. Which of the following statement is NOT correct about magnetic field?

A. Magnetic field lines are closed

B. The closer the field lines are, the stronger the magnetic field

C. Magnetic monopoles exist

D. Magnetic field is produced by moving charge

74. Two parallel copper wires are 1cm apart. Lightning sends a 10,000 A pulse of current along each conductor. What is the force per unit length on one conductor

A. 1000 N/m

C. 20 N/m

B. 200 N/m

D. 2000N/m

75. Find the magnitude of the force felt by an electron traveling at an angle of 60° to the earth's magnetic field at 1.4×10^7 m/s. The charge on an electron is 1.6×10^{-19} C and the magnitude of the earth's magnetic field is 5×10^{-5} T

- A. 0 N
 B. 9.7×10^{-17} N
 C. 1.1×10^{-16} N
 D. 8.6×10^{-17} N

76. A long straight wire carrying a steady current of 3A flowing in direction parallel to a unit vector $\frac{1}{\sqrt{3}}(\hat{i} + \hat{j} + \hat{k})$ is placed in a magnetic field $\vec{B} = (0.75\hat{i} + 0.4\hat{k})$ T. What is the magnetic force per unit length of the wire?

- A. $(0.69\hat{i} - 0.61\hat{j} - 1.3\hat{k})\frac{N}{M}$
 B. $(0.49\hat{i} - 0.51\hat{j} - 1.37\hat{k})\frac{N}{M}$
 C. $(0.49\hat{i} - 0.5\hat{j} - 1.37\hat{k})\frac{N}{M}$
 D. $(0.59\hat{i} - 0.7\hat{j} - 0.13\hat{k})\frac{N}{M}$

77. A rectangular loop of area 0.4m^2 is placed in a magnetic field that is changing at a rate of 100T/s. If the normal of the loop makes angle 60° with the magnetic field. What is the magnitude of induced EMF?

- A. 34.64V
 B. 20V
 C. 80V
 D. 40V

78. Two long wires of 10 m in length carries a current of 2.0 A and 0.5A in the same direction. The wires are separated by 4.0 cm. What is the magnetic force wires exerted on each other?

- A. 5×10^{-6} N
 B. 5×10^{-5} N
 C. 4×10^{-6} N
 D. 5×10^{-7} N

79. What is the expression of the centripetal acceleration of a particle of charge q and mass m moving in a uniform magnetic field B on a circle of radius r if B is perpendicular to the particle's direction of motion?

A. $\frac{q^2 B^2}{m^2} r$

C. $\frac{q^2 B^2}{m} r$

B. $\frac{2qB}{mr}$

D. $\frac{qB}{m}$

80. A charged particle is moving in a circular orbit in a magnetic field. If the strength of the magnetic field doubles, how does the radius of the particle's orbit change?

A. It is halved

C. It is quadrupled

B. It is doubled

D. It is quartered

81. An electron moving horizontally along the $+x$ axis enters a region of space with a horizontal uniform magnetic field pointing in the $+y$ direction. The electron will be deflected to

A. negative y direction

C. negative x direction

B. positive y direction

D. positive x direction

82. An inductor has a self-inductance of 12mH . The current in the circuit decreases at a rate of 2A/s . What is the magnitude of the induced electromotive force?

A. $2.4 \times 10^{-2}\text{V}$

C. $2.4\pi\text{V}$

B. $1.2\pi\text{V}$

D. $1.2 \times 10^{-2}\text{V}$

83. Which of the following is correct about the characteristic of current and voltage in A.C. circuits?

A. If the current is in phase with the voltage, the circuit is inductive

B. If the current leads the voltage, it is inductive circuit

C. If the current lags the voltage, the circuit is capacitive

D. If the current leads the voltage, its capacitive reactance is greater than inductive reactance

84. An RLC circuit is designed to have a resistance of 400Ω , capacitive reactance of 350Ω and inductive reactance of 50Ω . The circuit is connected to an alternative voltage source of effective value 50V , and frequency of 50Hz . What is the output average power?

A. 400W

C. 40W

B. 4W

D. 62.5W

85. Which of the following quantity has an electronvolt unit?

A. energy

C. charge

B. potential difference

D. electromagnetic intensity

86. A magnetic field of strength $5 \times 10^{-5} \text{ T}$ passes through an area of 20cm^2 that is at an angle of 60° to the magnetic field. What is the magnetic flux?

A. 0Wb

C. $8.7 \times 10^{-8} \text{ Wb}$

B. $2.5 \times 10^{-8} \text{ Wb}$

D. $5 \times 10^{-8} \text{ Wb}$

87. An electric generator has a coil of 400 turns and cross-sectional area 5m^2 rotating at angular frequency 0.524rad/s in a uniform magnetic field of 0.2T . What is the induced EMF produced from the electric generator in each second?

A. 209.6V

C. 200V

B. 104.8V

D. 182.4V

88. Which of the following statement is correct?

A. The direction of induced E.M.F. is such a direction as to enforce the change produces it

- B. Self-inductance of a coil is E.M.F. divided by magnitude of rate change of current with time
- C. The induced E.M.F. in a coil is inversely proportional to its number of turns
- D. Self-inductance of a coil is inversely proportional to the cross- sectional area of the coil

89. The induced electromotive force in a current carrying coil placed in a magnetic field does NOT depend on which of the following?

- A. The speed at which the coil moves if the relative motion does not result in changing the magnetic flux
- B. The length of the coil that is moving in a direction perpendicular to that of the magnetic field
- C. The area of the coil outside the field
- D. The change of magnetic flux density

90. Which statement is correct about a purely inductive circuit?

- A. The current leads the voltage by $\frac{\pi}{2}$
- B. The current is in phase with the voltage
- C. The current lags behind the voltage by $\frac{\pi}{2}$
- D. The current lags by $\pi/2$ at low frequencies and leads by $\frac{\pi}{2}$ at high frequencies.

91. What is the main reason why alternation current is used to transmit electricity?

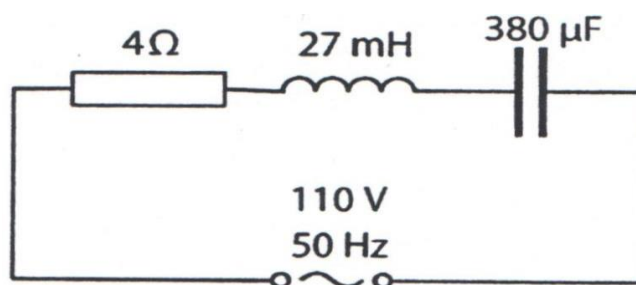
- A. To minimize power gain
- C. To maximize voltage gain
- B. To minimize energy loss
- D. To maximize current gain

92. . Two coils, held in fixed positions, have a mutual inductance of $100\ \mu\text{H}$. what is the peak voltage in one when the sinusoidal current given by $I(t) = (10.0\ \text{A}) \sin(1000\ t)$ flows in the other?

- A. $1.0\ \mu\text{V}$ B. $100.0\ \text{V}$ C. $10.0\ \text{V}$ D. 1.0V

93. Determine the total impedance for the circuit shown blow

- A. $0\ \Omega$
B. $4\ \Omega$
C. $27\ \Omega$
D. $31\ \Omega$



94. A 6.00 -- V battery is connected across the primary coil of a transformer having 50 turns. If the secondary coil of the transformer has 100 turns, what voltage appears across the secondary?

- A. 24.0V C. $6.00\ \text{V}$
B. 12.0V D. 3.00V

95. The peak voltage of the alternating emf is 141 volts. The effective value of the voltage in volts is

- A. 70.5 C. 141
B. 100 D. 200

96. The voltage output of a generator is given by $V = (300\text{V}) \sin(\omega t)$. What is the rms current in the circuit when this generator is connected to a $100\ \Omega$ resistor?

A. 1.50A

C. 1.12A

B. 2.12 A

D. 1.41A

97. Which device functions with the principle of mutual induction?

A. Electromagnet

C. Electric motor

B. Transformer

D. Transistor

98. Lenz's law in electromagnetic induction follows from which law of conservation

A. charge

C. energy

B. momentum

D. mass

99. Self-inductance is a quantity that describes:

A. the number of turns in a circuit.

B. the induction of an electric field by an AC current in lone coil.

C. the induction of a magnetic field by an AC current in a lone coil.

D. the steady state current in a coil.

100. Which conversion process forms the basis for the function of an electric generator?

A. alternating current to direct.

B. electrical energy to mechanical.

C. mechanical energy to electrical.

D. low voltage to high or vice versa.

=====END=====