

Section 1 - Junior Engineer Electrical

1) If the ratio of the ages of Mini and Tini is 5 : 6 at present, and fifteen years from now, the ratio will get changed to 8 : 9, then find Tini's present age.

- A) 18 years
- B) 30 years
- C) 33 years
- D) 24 years

2) Find the smallest number which will leave remainder 5 when divided by 8, 12, 16 and 20.

- A) 265
- B) 245
- C) 240
- D) 235

3) The amplification factor of a triode operating in the linear region depends strongly on

- A) the temperature of the cathode
- B) the separations of the grid from the cathode and the anode
- C) the grid potential
- D) the plate potential

4) The present ratio of ages of A and B is 4: 5. 18 years ago, this ratio was 11: 16. Find the sum total of their present ages.

- A) 105 years
- B) 90 years
- C) 80 years
- D) 110 years

5) The average voltage calculated in a time interval of 0.01 s with an AC source is rated 220 V, 50 Hz _____ .

- A) must be zero
- B) may be zero – 1
- C) is never zero
- D) is $(220/2)V$

6) A parallel plate capacitor having charge q on each plate is connected to a battery. Now,

- A) the battery supplies unequal and opposite charges to the two plates.
- B) the two plates of the capacitor have equal and opposite charges.
- C) the facing surfaces of the capacitor have equal and opposite charges.
- D) the outer surfaces of the plates have unequal charges.

7) Among the following which one have zero average value in a plane electromagnetic wave?

- A) magnetic field
- B) induced current
- C) electric energy
- D) magnetic energy

8) What is the electric field at origin if while moving on the X-axis from $x = -1$ cm to $x = +1$ cm the electric potential decreases uniformly from 120 V to 80 V?

- A) May be equal to OR greater than 20 V/cm
- B) Must be equal to 20 V/cm
- C) May be greater than 20 V/cm
- D) May be less than 20 V/cm

9) How will the dynamic plate resistance get impacted if a triode is operated in the linear region of its characteristics and the plate voltage is slightly increased?

- A) Remain almost the same
- B) Decrease
- C) Increase
- D) Become zero

10) A current passes through a resistor. Let K_1 and K_2 represent the average kinetic energy of the conduction electrons and the metal ions respectively.

- A) $K_1 < K_2$
- B) $K_1 = K_2$
- C) $K_1 > K_2$
- D) Any of these three may occur

11) What will happen to a compass needle if it is placed in the gap of a parallel plate capacitor and the capacitor is connected to a battery through a resistance?

- A) Deflects for a very short time and then comes back to the original position
- B) Deflects and remains deflected as long as the battery is connected
- C) Deflects and gradually comes to the original position in a time which is large compared to the time constant
- D) Does not deflect

12) Three single phase transformers of ratio 1:10 are connected in delta-star to supply a three phase star connected load. The primary side is connected to 3 phase, 400 volts supply. The line voltage on the load side is

- A) None of the other three
- B) 4000 Volts
- C) $4000\sqrt{3}$ Volts
- D) $4000/\sqrt{3}$ Volts

13) Among the following by which of them the Electric conduction in a semiconductor takes place?

- A) Both electrons and holes
- B) Holes only
- C) Electrons only
- D) Neither electrons nor holes

14) If there is space charge in a diode valve,

- A) the plate current decreases
- B) the rate of emission of thermions increases
- C) the plate voltage increases
- D) the saturation current increases

15) A fully charged parallel plate capacitor having charge Q is filled with a dielectric slab. The magnitude of the induced charge on each surface of the dielectric is Q' . Then:

- A) Q' must be smaller than Q
- B) Q' must be larger than Q
- C) Q' may be larger than Q .
- D) Q' must be equal to Q

16) Rs 3000 is distributed among A , B and C such that A gets $2/3$ rd of what B and C together get and C gets $1/2$ of what A and B together get. Find C 's share.

- A) Rs.1000
- B) Rs.750
- C) Rs.1200
- D) Rs.800

17) For what value of the potential grid is the plate current in a triode valve is maximum?

- A) Positive
- B) Zero
- C) Negative
- D) Non-positive

18) What will be the frequency of the source, if the magnetic field energy in an inductor changes from maximum value to minimum value in 5.0 ms when connected to an AC source?

- A) 200 Hz
- B) 50 Hz
- C) 500 Hz
- D) 20 Hz

19) The average age of three boys is 15 years. If their ages are in ratio 3:5:7, the age of the youngest boy is

- A) 21 years
- B) 15 years
- C) 9 years
- D) 18 years

20) Consider the following two statements:

1. Kirchhoffs junction law follows from conservation of charge.
2. Kirchhoffs loop law follows from conservative nature of electric field.

- A) Both 1 and 2 are correct
- B) 2 is correct but 1 is wrong
- C) 1 is correct but 2 is wrong
- D) Both 1 and 2 are wrong

21) Two solenoids have identical geometrical construction but one is made of thick wire and the other of thin wire. Which of the following quantities are different for the two solenoids?

- i. self-inductance
- ii. rate of Joule heating if the same current goes through them
- iii. magnetic field energy if the same current goes through them
- iv. time constant

- A) i & iii
- B) All of these
- C) ii & iii
- D) ii & iv

22) What will be the impact on electric potential if there is an electric field in a region which is directed outward and is proportional to the distance r from the origin? Take the electric potential at the origin to be zero.

- A) It is proportional to r^2
- B) It increases as one goes away from the origin
- C) It is uniform in the region
- D) It is proportional to r

23) Electric conduction takes place in a discharge tube due to the movement of _____.

- A) positive ions
- B) neutron
- C) protons
- D) He-

24) Which of the given assumptions support the following statement?

Statement:

Mahesh's birthday was known to his friends.

Assumptions:

- I. Mahesh arranges birthday party only for his family members.
- II. On his birthday, Mahesh received a bouquet and greeting card from his mother and best wishes from friends.
- III. Mahesh received blessings from his mother and best wishes from family members.

- A) Only III is implicit
- B) Only II is implicit
- C) Only I and III are implicit
- D) Only II and III are implicit

25) Which one of the following metals made its earliest appearance in India before any other place in the world?

- A) Silver
- B) Tin
- C) Gold
- D) Copper

26) Displacement current goes through the gap between the plates of a capacitor when the charge of the capacitor

- A) does not change
- B) is zero
- C) increases
- D) decreases

27) A point charge P generates an electric field of circular shape and another point charge Q is rotated along this circle. What is the work done by the electric field on the rotating charge in one complete revolution?

- A) zero if the charge P is at the center and nonzero at other points
- B) negative at the center
- C) positive at the center
- D) zero at all points

28) If an electromagnetic wave is passed through a small volume containing energy. The wave will oscillate with _____ .

- A) half the frequency of the wave
- B) double the frequency of the wave
- C) the frequency of the wave
- D) zero frequency

29) Mark the correct options:

- A) Gauss's law is valid only for symmetrical charge distributions
- B) The flux of an electric field through a closed surface is always zero if there is no net charge in the volume enclosed by the surface.
- C) Gauss's law is valid only for charges placed in vacuum
- D) The electric field calculated by Gauss's law is the field due to the charges inside the Gaussian surface

30) What will be the number of current pulses per second through the resistor, if a diode, a resistor and a 100 Hz AC source are connected in series?

- A) 50
- B) 100
- C) 25
- D) 200

31) The electric field at the origin is along the positive X-axis. A small circle is drawn with the center at the origin cutting the axes at points I, II, III and IV having coordinates (b, 0), (0, b), (-b, 0), (0, -b) respectively. Out of the points on the periphery of the circle, the potential is minimum at

- A) III
- B) II
- C) I
- D) IV

32) A positively charged particle projected towards east gets deflected towards north by a magnetic field. Then which of the following is the direction of magnetic field?

- A) Towards south
- B) Upward
- C) Downward
- D) Towards west

33) What might be connected to the source so that when an AC series circuit is formed, the instantaneous current is zero when the instantaneous voltage is maximum?

- A) Impure capacitor
- B) Pure inductor
- C) Combination of an inductor and a capacitor
- D) Pure resistor

34) Which of the following quantities will increase if an iron rod is inserted in the solenoid along its axis if a constant current is maintained inside the solenoid?

- A) magnetic field at the corner
- B) self-inductance of the solenoid
- C) rate of Joule heating
- D) magnetic flux is not linked with the solenoid

35) What will be the direction of electric force if a metallic particle having no net charge is placed near a finite metal plate carrying a positive charge?

- A) Zero
- B) Towards the plate
- C) Infinite
- D) Parallel to the plate

36) What will happen to the induced emf in a conducting loop which is placed in a uniform magnetic field with its plane perpendicular to the field?

- A) It is rotated about a diameter
- B) It is rotated about its axis
- C) It remains uniform
- D) It is translated

37) Which of the following situation arises when a proton and electron are placed in a uniform electric field?

- A) Their accelerations will be equal
- B) The electric forces acting on them will be equal
- C) The magnitudes of the forces will be equal
- D) The magnitudes of their accelerations will be equal

38) A resistor of resistance R is connected to an ideal battery. What will be the impact on dissipated power if the value of R is decreased?

- A) decrease
- B) follows a sine curve
- C) remain unchanged
- D) increase

39) A magnetic field can be produced by _____ .

- i. a moving charge
- ii. a changing electric field

- A) only i
- B) none of these
- C) only ii
- D) both i and ii

40) Two non ideal batteries are connected in series. Consider the following statements:

1. The equivalent emf is larger than either of the two emfs.
2. The equivalent internal resistance is smaller than either of the two internal resistances.

- A) 1 is correct but 2 is wrong
- B) 2 is correct but 1 is wrong
- C) Each of 1 and 2 is correct
- D) Each of 1 and 2 is wrong

41) A capacitor C1 of capacitance 1 pF and a capacitor C2 of capacitance 2 pF are separately charged by a common battery for a long time. The two capacitors are then separately discharged through equal resistors. Both the discharge circuits are connected at $t = 0$.

- A) The current in each of the two discharging circuits is zero at $t = 0$.
- B) The currents in the two discharging circuits at $t = 0$ are unequal.
- C) C1 loses 50% of its initial charge sooner than C2 loses 50% of its initial charge.
- D) The currents in the two discharging circuits at $t = 0$ are not zero.

42) The starting torque of a 3-phase slip ring induction motor can be increased by

- A) Adding resistance to the rotor
- B) Adding resistance to the stator
- C) Adding resistance to both stator and rotor
- D) None of the other three

43) Normally the Z bus matrix is a _____.

- A) Full matrix
- B) Null matrix
- C) Sparse matrix
- D) Unity matrix

44) Following operations can be performed on a capacitor:

- P - connect the capacitor to a battery of emf e .
- Q - disconnect the battery.
- R - reconnect the battery with polarity reversed.
- S - insert a dielectric slab in the capacitor.

- A) The electric field in the capacitor before the action PS is the same as that after SP.
- B) The charge appearing on the capacitor is greater after the action PSQ than after the action PQS.
- C) In PQR (perform P, then Q, then R) the stored electric energy remains unchanged and no thermal energy is developed.
- D) The electric energy stored in the capacitor is greater before the action SPQ than after the action PQS.

45) The peak voltage in a 220 V AC source is _____ .

- A) 440 V
- B) 220 V
- C) about 160 V
- D) about 310 V

46) A current passes through a wire of non-uniform cross-section. Which of the following quantities are independent of the cross-section?

- A) The charge crossing in a given time interval
- B) Free-electron
- C) Current density
- D) Drift speed

47) When an impurity is doped into an intrinsic semiconductor, the conductivity of the semiconductor

- A) remains the same
- B) increases
- C) decreases
- D) becomes zero

48) How many straight lines can be formed from 8 non-collinear points on the X-Y plane?

- A) 19859
- B) 18
- C) 28
- D) 56

49) In conductors which are closely spaced and carrying AC current, the non-uniform distribution of current is caused by:

- A) both Skin effect and proximity effect
- B) Proximity effect only
- C) Skin effect only
- D) none of the other three

50) The immediate effect of devaluation by a country is

- A) that exports become more competitive
- B) fall in demand for imports
- C) a boost to import-competing industries
- D) all of the other three options

51) In a parallel-plate capacitor a thin metal sheet is placed between the plates at equal distance. The sheet remains parallel to the plates of the capacitor. Then

- A) The potential difference between the plates will increase.
- B) The capacitance will increase.
- C) The battery will supply more charge.
- D) Equal and opposite charges will appear on the two faces of the metal plate.

52) A parallel-plate capacitor has plates of unequal area. The larger plate is connected to the positive terminal of the battery and the smaller plate to its negative terminal. Let Q_+ and Q_- be the charges appearing on the positive and negative plates respectively, the relation between Q_+ and Q_- is

- A) $Q_+ > Q_-$
- B) The information is not sufficient to decide the relation between Q_+ and Q_-
- C) $Q_+ = Q_-$
- D) $Q_+ < Q_-$

53) An LR circuit with a battery is connected at $t = 0$. Which of the following quantities is not zero just after the connection?

- A) current in the circuit
- B) magnetic field energy in the inductor
- C) emf induced in the inductor.
- D) power delivered by the battery

54) The cause of high temperature of the filament when the plate current in a triode valve is zero is _____.

- A) $V_g = 0, V_p < 0$
- B) $V_g > 0, V_p > 0$
- C) $V_g > 0, V_p < 0$
- D) $V_g < 0, V_p = 0$

55) E-stamping facility is launched in which high court of India?

- A) Andhra Pradesh
- B) Uttar Pradesh
- C) Rajasthan
- D) Haryana

56) Among the following which situation is likely to happen when an electric dipole is placed in an electric field generated by a point charge.

- A) The net electric force on the dipole must be zero
- B) The net electric force on the dipole may be zero
- C) The torque on the dipole due to the field must be zero
- D) The torque on the dipole due to the field may be zero

57) A p-type semiconductor is

- A) uncharged
- B) negatively charged
- C) positively charged
- D) uncharged at 0 K but charged at higher temperatures

58) An inductor-coil having some resistance is connected to an AC source. Which of the following quantities will have average value over a cycle zero?

- A) emf in the inductor
- B) Joule heat
- C) current
- D) magnetic energy stored in the inductor

59) Which state has become the first Indian state to have implemented Public Fund Management System (PFMS)?

- A) Uttar Pradesh
- B) Rajasthan
- C) Jammu & Kashmir
- D) Jharkhand

60) Among the following situation, an electrolysis experiment is stopped and the battery terminals are reversed. Then

- A) The electrolysis will stop
- B) The rate of liberation of material will remain the same
- C) Heat will be produced at a greater rate
- D) The rate of liberation of material at the electrodes will increase

61) Among the following situation which of the situation is most likely to occur if an electric dipole is placed at the center of a sphere:

- A) The electric field is zero at every point of the sphere
- B) The electric field is not zero anywhere on the sphere
- C) The electric field is zero on a circle on the sphere
- D) The flux of the electric field through the sphere is zero

62) The plate current in a diode is zero. It is possible that _____.

- A) the temperature of the filament is high
- B) the plate voltage is non-zero
- C) the plate voltage is slightly positive
- D) the plate voltage is very negative

63) What happens to the ratio of resistivity to conductivity as the temperature of a conductor increases?

- A) Increases
- B) May increase or decrease depending on the actual temperature.
- C) Decreases
- D) Remains constant

64) A toy is in the shape of a right circular cylinder with a hemisphere on one end and a cone on the other. The height and radius of the cylindrical part are 13 cm and 5 cm respectively. The radii of the hemispherical and conical parts are the same as that of the cylindrical part. Calculate the surface area of the toy if the height of conical part is 12 cm.

- A) 385 cm^2
- B) 1440 cm^2
- C) 770 cm^2
- D) 1580 cm^2

65) The saturation current in a triode valve can be changed by changing _____.

- A) the plate voltage
- B) the temperature of the cathode
- C) the grid voltage
- D) the separation between the grid and the cathode

66) Imagine a large plastic plate is kept in front of you and a charge Q is uniformly distributed over that plate. Now at a point P , which is close to, the center of the plate the electric field is 10 V/m . If the material of the plate is changed from plastic to copper with same geometrical dimensions and carrying the same charge Q , the electric field at the point P will become

- A) 20 V/m
- B) 5 V/m
- C) Zero
- D) 10 V/m

67) A capacitor acts as an infinite resistance for _____.

- A) AC
- B) DC as well as AC
- C) neither AC nor DC
- D) DC

68) Mark out the correct option.

- A) None of the other three
- B) An ammeter should have small resistance
- C) A voltmeter should have small resistance
- D) An ammeter should have large resistance

69) Which of the following are true for cathode ray?

- A) It travels along straight lines
- B) It emits X-ray when strikes a non-metal
- C) It is an electromagnetic induced wave
- D) It is not deflected by magnetic field

70) A dishonest milkman mixed 1 litre of water for every 3 litres of milk and thus made up 36 litres of milk. If he now adds 15 litres of milk to the mixture, find the ratio of milk and water in the new mixture.

- A) 9:4
- B) 14:3
- C) 7:2
- D) 12:5

71) What is the ratio of power dissipated when two resistors R and $2R$ are connected in series in an electric circuit.

- A) 4: 1
- B) 2: 1
- C) 1: 2
- D) 1: 4

72) A road that is 7 m wide surrounds a circular path whose circumference is 352 m. What will be the area of the road?

- A) 654.5 cm^2
- B) 5236 cm^2
- C) 1309 cm^2
- D) 2618 cm^2

73) Mark the correct options.

- A) A triode valve can be used as a rectifier
- B) A triode valve can be used as an inductor
- C) A diode valve can be used as an amplifier
- D) A diode valve can be used as a resistor

74) What is the ratio of power dissipated when two resistances R and $2R$ are connected in parallel in an electric circuit?

- A) 4 : 1
- B) 2 : 1
- C) 1 : 2
- D) 1 : 4

75) Which of the following quantities remains constant when a resistor connected to a battery is heated due to the current?

- A) Resistivity
- B) Number of free electrons
- C) Drift speed
- D) Resistance

76) If the distance between the plates of a parallel plate capacitor is increased. Which of the following will change?

- A) Potential difference across the capacitor
- B) Energy density between the plates
- C) Charge on the capacitor
- D) None of the three options

77) A cat takes 5 leaps for every 4 leaps of a dog, but 3 leaps of the dog are equal to 4 leaps of the cat. What is the ratio of the speed of the cat to that of the dog?

- A) 15:16
- B) 15:11
- C) 11:15
- D) 16:15

78) If the prime mover of the alternator connected to supply grid is stopped, then the alternator will

- A) Continue to run as generator
- B) Run as synchronous motor
- C) Stop running
- D) None of the other three

79) Imagine a charge q is placed at the center of the open end of a cylindrical vessel. The flux of the electric field through the surface of the vessel is

- A) q/ϵ_0
- B) zero
- C) $q/2\epsilon_0$
- D) $2q/\epsilon_0$

80) Among the following which of the particles will experience maximum magnetic force (magnitude) when projected with the same velocity perpendicular to a magnetic field?

- A) He^+
- B) Li^{++}
- C) Proton
- D) Electron

81) In a boat there are 8 men whose average weight is increased by 1 kg when 1 man of 60 kg is replaced by a new man. What is the weight of the new comer?

- A) 70
- B) 68
- C) 66
- D) 69

82) For which of the following the speed of electromagnetic waves is the same _____ .

- A) for all wavelengths
- B) in all media
- C) for all frequencies
- D) for all intensities

83) A metal sheet is placed in front of a strong magnetic pole. A force is needed to _____ .

- A) hold the sheet there if the metal is nonmagnetic
- B) move the sheet away from the pole with uniform velocity if the metal is nonmagnetic
- C) hold the sheet there if the metal is magnetic
- D) move the sheet away from the pole with increasing velocity if the metal is magnetic

84) An electric field is applied to a semiconductor. Let the number of charge carriers be n and the average drift speed be v . If the temperature is increased,

- A) both n and v will decrease
- B) both n and v will increase
- C) v will increase but n will decrease
- D) n will increase but v will decrease

85) Two non ideal batteries are connected in parallel. Consider the following statements:

1. The equivalent emf is smaller than either of the two emfs.
2. The equivalent internal resistance is smaller than either of the two internal resistances.

- A) Both 1 and 2 are wrong
- B) 1 is correct but 2 is wrong
- C) Both 1 and 2 are correct
- D) 2 is correct but 1 is wrong

86) Six persons - Akshay, Bobby, Celina, Dimple, Esha, and Faisal took up a job with XYZ Consultants in a week from Monday to Saturday. Each of them joined for different posts on different days. The posts were of-Clerk, Officer, Technician, Manager, Supervisor and Sales Executive though not in the same order. Faisal joined as a Manager on the first day. Bobby joined as a Supervisor but neither on Wednesday nor Friday. Dimple joined as a Technician on Thursday. The officer joined the firm on Wednesday. Esha joined as a clerk on Tuesday. Akshay joined as a Sales Executive.

Who joined the firm on Wednesday?

- A) Celina
- B) Esha
- C) Data inadequate
- D) Bobby

87) The electrochemical equivalent, of a material depends on

- A) the amount of charge passed through the electrolyte
- B) the nature of the material
- C) the amount of this material present in the electrolyte
- D) the current through the electrolyte containing the material

88) Electric charges are distributed in a small volume. If the flux of the electric field through a spherical surface of radius 10 cm surrounding the total charge is 25 V-m, then what will be the flux over a concentric sphere of radius 20 cm?

- A) 15 V-m
- B) 100 V-m
- C) 25 V-m
- D) 200 V-m

89) If 30 oxen can plough $\frac{1}{7}$ th of a field in 2 days, how many days 18 oxen will take to do the remaining work?

- A) 30 days
- B) 15 days
- C) 18 days
- D) 20 days

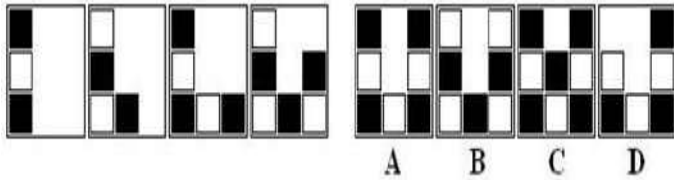
90) At constant temperature, pressure of a definite mass of gas is inversely proportional to the volume. If the pressure is reduced by 20%, find the respective change in volume.

- A) -25%
- B) -16.66%
- C) +25%
- D) +16.66%

91) Three men rent a farm for Rs. 7000 per annum. A puts 110 cows in the farm for 3 months, B puts 110 cows for 6 months and C puts 440 cows for 3 months. What percentage of the total expenditure should A pay?

- A) 20%
- B) 16.66%
- C) 11.01%
- D) 14.28%

92) Which figure completes the series?



- A) B
- B) C
- C) A
- D) D

93) Expansion of WTO is

- A) World Traffic Organisation
- B) World Tools Organisation
- C) World Trade Organisation
- D) Wealth Trade Organisation

94) A charged particle is whirled in a horizontal circle on a frictionless table by attaching it to a string fixed at one point. If a magnetic field is switched on in the vertical direction, the tension in the string

- A) will decrease
- B) will increase
- C) will remain the same
- D) may increase or decrease

95) The function $f(x) = 2x - x^2 + 3$ has

- A) Only maxima at $x = 1$
- B) A maxima at $x = 1$ and minimum at $x = -5$
- C) A maxima at $x = 1$ and minimum at $x = 5$
- D) Only minimum at $x = 5$

96) Which of the following will produce Electromagnetic waves?

- A) a static charge
- B) chargeless particles
- C) a moving charge
- D) an accelerating charge

97) Each of the 6 friends – A, B, C, D, E, and F wears a different branded shirt among Polo, Reebok, Adidas, Gap, Milan and Lava of six different colours among Red, Blue, Green, White, Pink and Black not necessarily in the same order. C wears a red colour shirt which is neither Polo nor Lava. A wears Reebok shirt which is neither black nor pink in colour. Either E or F wears white shirt. B wears Gap shirt which is not pink in colour. D wears either Adidas or blue shirt. E wears blue shirt which is not Lava.

The Gap shirt is in which colour?

- A) None of the other three
- B) White
- C) Green
- D) Data inadequate

98) A sister is looking for her brother. She went 90 meters in the east before turning to her right. She went 20 meters before turning to her right again to look for her brother at her uncle's place 30 meters from this point. Her brother was not there. From there, she went 100 meters to her north before meeting her brother in a street. How far did the sister meet her brother from starting point?

- A) 95 metre
- B) 90 metre
- C) 105 metre
- D) 100 metre

99) 12 students can do a job in 10 days on the starting day, two of them informed that they are not coming. By what fraction will the number of days required for doing the whole work get increased?

- A) $1/5$
- B) $4/5$
- C) $3/8$
- D) $3/4$

100) In the stator winding of a synchronous generator the chording angle is _____ for eliminating fifth harmonic in the induced voltage.

- A) 36 degrees
- B) 45 degrees
- C) 30 degrees
- D) None of the other three

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Answer Key

- | | | | |
|-------|-------|-------|--------|
| 1. B | 31. C | 61. C | 91. D |
| 2. B | 32. C | 62. C | 92. C |
| 3. B | 33. B | 63. A | 93. C |
| 4. B | 34. B | 64. C | 94. D |
| 5. B | 35. B | 65. B | 95. A |
| 6. C | 36. A | 66. D | 96. D |
| 7. A | 37. C | 67. D | 97. A |
| 8. A | 38. D | 68. B | 98. D |
| 9. A | 39. D | 69. A | 99. A |
| 10. C | 40. A | 70. B | 100. A |
| 11. C | 41. C | 71. C | |
| 12. C | 42. A | 72. D | |
| 13. A | 43. A | 73. A | |
| 14. A | 44. B | 74. B | |
| 15. A | 45. D | 75. B | |
| 16. D | 46. A | 76. A | |
| 17. A | 47. B | 77. A | |
| 18. B | 48. D | 78. B | |
| 19. C | 49. A | 79. C | |
| 20. A | 50. D | 80. B | |
| 21. D | 51. B | 81. B | |
| 22. A | 52. C | 82. D | |
| 23. A | 53. C | 83. C | |
| 24. B | 54. C | 84. D | |
| 25. D | 55. C | 85. D | |
| 26. B | 56. D | 86. A | |
| 27. D | 57. A | 87. B | |
| 28. B | 58. C | 88. C | |
| 29. B | 59. D | 89. D | |
| 30. B | 60. B | 90. C | |