Chapter 13 CURRENT ELECTRICITY

Each question has four possible answers, tick (✓) the correct answer:

1. In liquids and gases, the current is due to the motion of:

   (a) Negative charges   (b) Neutral particle

   (c) Positive charges   (d) Both negative and positive charges

2. The charge carriers in metallic conductors are:

   (a) Free electrons and ions   (b) Electrons

   (c) Electrons and protons   (d) +ve and −ve ions

3. The conventional current is due to the flow of:

   (a) Atoms and molecules   (b) Positive charge

   (c) Negative charge   (d) Both (b) and (c)

4. The electronics current is due to the flow of:

   (a) Positive charge   (b) Negative ions

   (c) Positive ions   (d) Negative charge

5. An electric current in a wire involves the movement of:

   (a) Electrons   (b) Atoms

   (c) Protons   (d) Molecules

6. When electric current passes through the conductors, it increases:

   (a) P.E of the atoms   (b) K.E of the atoms

   (c) Atomic size   (d) Number of protons

7. When a pot difference of 4 volt is applied across resistance, 10 J of energy is converted. Find charge flows:

   (a) 0.20 C   (b) 2.5 C

   (c) 5.0 C   (d) 10.0 C

8. The motion of free electrons inside the metallic conductors is:

   (a) Circular motion   (b) Linear motion

   (c) Random motion   (d) None of above

9. The net charge flowing across the cross-sectional area per unit time is known as:

   (a) Electric flows   (b) Electric current

   (c) Pot difference   (d) Ampere

10. Electric heater is the effect of electric current:

  (a) Heating effect
  (b) Chemical effect
  (c) Magnetic effect
  (d) None of above

11. Thermo-couple convert –––––– into electrical energy:

  (a) Heat energy
  (b) Nuclear energy
  (c) Mechanical energy
  (d) Chemical energy

12. If a charge Q flows through any cross section of the conductor in time t, the current I is:

  (a) $I = Qt$
  (b) $I = \dfrac{Q}{t}$

  (c) $I = \dfrac{t}{Q}$
  (d) $I = \dfrac{Q^2}{t}$

13. SI unit of electric current is:

  (a) Ampere
  (b) Coulomb
  (c) Volt
  (d) Ohm

14. At constant temp, the current flowing through a conductor is directly proportional to the potential difference across its ends is called:

  (a) Charles law
  (b) Amperes law
  (c) Coulombs law
  (d) Ohm's law

15. Most practical applications of electricity:

  (a) Molecules in motion
  (b) Electrons at rest
  (c) Charge in motion
  (d) Atoms in notion

16. The conventional current is the name given to current due to flow of:

  (a) Positive charges
  (b) Negative charges
  (c) Both (a) and (b)
  (d) None of these

17. A current of 1 ampere is passing through a conductor, the charge passing through it in one minute is:

  (a) 40 coulomb
  (b) 60 coulomb
  (c) 2 coulomb
  (d) None of these

18. The magnitude of the drift velocity is of the order of:

  (a) 10^{-3} m/s
  (b) 10^{-4} m/s
  (c) 10^{-6} m/s
  (d) 10^{3} m/s

19. Drift velocity is used when the ends of a wire are:

  (a) Connected to a voltage source
  (b) Not connected to voltage source
  (c) At different values of potential
  (d) Both (a) and (c)

20. The production of heat due to an electric current flowing through a conductor is given by:

  (a) Feed back effect
  (b) Joule's effect
  (c) Compton effect
  (d) Photo electric effect

21.   When same current passes for same time through a thick and thin wire:

    (a)   No heat is produced in wire   **(b)**   More heat is produced in thin wire

    (c)   More heat is produced in thick wire   **(d)**   None of these

22.   The average velocity gained by electrons in a conductor placed in electric field is called:

    (a)   Variable velocity   **(b)**   Uniform velocity

    (c)   Drift velocity   **(d)**   Instantaneous velocity

23.   A wire having very high value of conductance is said to be:

    (a)   Very good conductor   **(b)**   An insulator

    (c)   Moderately good conductor   **(d)**   None of liens

24.   The effects of bends in a wire on its electrical resistance are:

    (a)   Zero   **(b)**   Larger

    (c)   Smaller   **(d)**   None of these

25.   An electric field is generated along the wire when:

    (a)   A constant potential is maintained across the wire

    (b)   Net current is zero

    (c)   A constant potential difference is maintained across the wire

    (d)   None of these

26.   In order to have a constant current through a wire, the potential difference across its ends should be:

    (a)   Increasing   **(b)**   Decreasing

    (c)   Zero   **(d)**   Maintained constant

27.   When two spherical conducting balls at different potentials are joined by metallic wire, after some time, potential difference will be:

    (a)   Same   **(b)**   Zero

    (c)   Different   **(d)**   None of these

28.   Conversion of chemical energy into electrical energy can be achieved by:

    (a)   Solar cell   **(b)**   Photo voltaic cell

    (c)   Dry cell   **(d)**   None of these

29.   The device, which converts heat energy into electrical energy is called:

    (a)   Thermo couple   **(b)**   Photo voltaic cell

    (c)   Thermistor   **(d)**   Thermostat

30.   Heating effect of current is used in:

    (a)   Electric Kittle   **(b)**   Electric motor

    (c)   Electric taster   **(d)**   Both (a) and (c)

31.   Magnetic effect of current is used:

    (a)   To detect a current   **(b)**   To measure a current

    (c)   In electric motor   **(d)**   All of above

32. Electrolysis is the study of conduction of electricity through:

    (a) Liquids   **(b)** Solids

    (c) Greases   **(d)** All

33. The vessel containing the two electrodes and certain liquid is known:

    (a) Electrolyte   **(b)** Thermometer

    (c) Voltameter   **(d)** None of these

34. The voltameter usually contains:

    (a) Dilute solution of $CuSo_4$ **(b)** Water

    (c) Carbon   **(d)** $CuSO_4$ in solid form

35. During electrolysis process, density of $CuSO_4$ solution:

    (a) Remains constant   **(b)** Decreased

    (c) Increased   **(d)** None of these

36. The magnitude of magnetic effects depends upon:

    (a) Quality of electricity passed through the liquid

    (b) Colour of the liquid

    (c) Nature of the liquid

    (d) Both (a) and (c)

37. Mathematically ohm's law can be expressed as:

    (a) $V = \dfrac{I}{R}$ **(b)** $V = IR$

    (c) $R = VI$ **(d)** None of above

38. The conductors which obey Ohm's law are called:

    (a) Super conductors   **(b)** Semi-conductors

    (c) Ohmic   **(d)** Non-ohmic

39. The conductors which do not obey Ohm's law are called:

    (a) Non-Ohmic   **(b)** Ohmic

    (c) Super conductors   **(d)** Semi-conductors

40. For ohmic devices, the graph between V and I is:

    (a) A curve   **(b)** A straight line

    (c) Parabola   **(d)** None of above

41. For non-ohmic devices, the graph between V and I is:

    (a) Not a straight line   **(b)** A straight line

    (c) A curve   **(d)** All of above

42. The opposition offered by the conductor to the flow of current is called:

    (a) Conductance   **(b)** Inductance

    (c) Resistance   **(d)** None of above

43. The resistance on a one metre cube of a conductor is called:

- **(a)** Resistivity
- **(b)** Inductivity
- **(c)** Permitivity
- **(d)** Conductivity

44. The SI unit of resistance is:

- **(a)** Ohm
- **(b)** Ampere
- **(c)** Volt
- **(d)** Joule

45. The SI unit of resistivity is:

- **(a)** Ohm-m
- **(b)** Ohm-m^2
- **(c)** Ohm-m^3
- **(d)** Ohm

46. The reciprocal of a resistance is called:

- **(a)** Conductance
- **(b)** Inductance
- **(c)** Reactance
- **(d)** Resistivity

47. The reciprocal of resistivity is:

- **(a)** Conductivity
- **(b)** Permitivity
- **(c)** Resistance
- **(d)** Voltage

48. The SI unit of conductance is:

- **(a)** mho
- **(b)** Ohm
- **(c)** mho-m^{-1}
- **(d)** None of above

49. If the resistivity of the conductor is large then it is:

- **(a)** An insulator
- **(b)** A poor conductor
- **(c)** A good conductor
- **(d)** A conductor

50. If the resistivity of the conductor is small then it is:

- **(a)** Good conductor
- **(b)** Conductor
- **(c)** Insulator
- **(d)** Poor conductor

51. The study of conductance of Electricity through liquids is known as:

- **(a)** Electrolysis
- **(b)** Resistivity
- **(c)** Conductivity
- **(d)** None of above

52. Conductance is:

- **(a)** Reciprocal of resistance
- **(b)** Measured in mho
- **(c)** Another name of resistance
- **(d)** All of above

53. The value of the resistivity is the least for:

- **(a)** Silver
- **(b)** Aluminium
- **(c)** Copper
- **(d)** All of above

54. Which of the following substance has got positive temperature coefficient of resistance:

- **(a)** Copper
- **(b)** Aluminium
- **(c)** Silver
- **(d)** All of above

55. Colour code carbon resistance consist of:

    (a) Four bands read from left to right   **(b)** Three bands read from left to right

    (c) Four bands read from right to left   **(d)** None of these

56. The third band of the colour code:

    (a) Gives the third digit   **(b)** Gives the number of zeros

    (c) Give the tolerance   **(d)** None of these

57. The fourth band is a:

    (a) Gold band   **(b)** Silver band

    (c) Brown band   **(d)** Both (a) and (b)

58. Gold band shows a tolerance of:

    (a) $\pm\,10\%$ **(b)** $\pm\,20\%$

    (c) $\pm\,5\%$ **(d)** 10%

59. Silver band shows a tolerance of:

    (a) $\pm\,10\%$ **(b)** $\pm\,20\%$

    (c) $\pm\,5\%$ **(d)** 10%

60. If there is no fourth band, tolerance is shows as:

    (a) $\pm\,10\%$ **(b)** $\pm\,20\%$

    (c) $\pm\,5\%$ **(d)** 10%

61. The wire used in the construction of a rheostat is of the material:

    (a) Iron   **(b)** Silver

    (c) Gold   **(d)** Manganin

62. To use a rheostat as variable resistor, the terminals which are inserted in a circuit are:

    (a) Fixed terminal A and sliding contact C **(b)** Both fixed terminals A and B

    (c) Fixed terminal B and sliding contact C **(d)** All of above

63. Thermistors are made from mixtures of metallic oxides of:

    (a) Gold   **(b)** Silver

    (c) Manganese   **(d)** Carbon

64. Thermistors are prepared under:

    (a) High pressure and high temperature   **(b)** High pressure and low temperature

    (c) Low pressure and low temperature   **(d)** None of these

65. Thermistors may be in the form of:

    (a) Rods   **(b)** Washers

    (c) Beads   **(d)** Either of these

66. A temperature changes converts changes of temperature into:

    (a) Electrical voltage   **(b)** Light signals

    (c) Sound signals   **(d)** All of above

67. In the construction of a rheostat, we use manganin which is an alloy of:

(a) Cu, Ag and Fe   (b) Fe and Ni

(c) Cu, Au and Fe   (d) Cu, Ni, Fe and Mn

68. Work done in moving a charge ΔQ up through the potential difference V is given be:

(a) $W = \dfrac{\Delta Q}{V}$ (b) $W = \dfrac{V}{\Delta Q}$

(c) $W = V \Delta Q$ (d) $W = \dfrac{1}{V \, \Delta Q}$

69. When the current is being drawn from the battery:

(a) V = E + Ir is applied   (b) V = E – Ir is applied

(c) It is being discharged   (d) Both (a) and (c)

70. When the current is drawn from a cell, its terminal potential difference and emf are:

(a) Different   (b) Same

(c) Both zero   (d) None of them

71. The resistance present between the two electrodes of the cell is due to:

(a) Connecting wires   (b) An electrolyte present between them

(c) Electrodes themselves   (d) None of these

72. When a battery is being charged, its terminal potential difference is:

(a) Less than its emf   (b) Greater than its emf

(c) Equal to emf   (d) None of these

73. The loss of electrical energy per second is called:

(a) Power dissipation   (b) Energy dissipation

(c) Work   (d) None of these

74. The unit of emf is:

(a) Newton   (b) Joule

(c) Ampere   (d) J/c

75. The quantity having the same unit as that of emf is:

(a) Energy   (b) Momentum

(c) Potential difference   (d) Current

76. Kirchhoff's first rule is a manifestation of law of enervation of:

(a) Charge   (b) Mass

(c) Energy   (d) None of these

77. Kirchhoff's second rule is a manifestation of law of conservation of:

(a) Charge   (b) Mass

(c) Energy   (d) None of these

78. A voltmeter can read the correct potential difference only when the current drawn by it from the cell is:

    (a)   Smaller   **(b)**   Greater

    (c)   Zero   **(d)**   None of these

79. The unknown emf Ex, can be found by using potentiometer by formula:

    (a) $Ex = \dfrac{R}{r} \times E$ **(b)** $Ex = E\dfrac{r}{R}$

    (c) $Ex = \dfrac{l}{L} \times E$ **(d)**   Both (b) and (c)

80. The electrode connected with positive terminal of battery is called:

    (a)   Anode   **(b)**   Cathode

    (c)   Electrode   **(d)**   Electrolyte

81. The electrode connected with negative terminal of battery is called:

    (a)   Electrode   **(b)**   Cathode

    (c)   Anode   **(d)**   Electrolyte

82. The resistance of a conductor through which a current of one ampere is flowing when a potential difference across its ends is one volt is:

    (a)   One volt   **(b)**   One ohm

    (c)   One ampere   **(d)**   One coulomb

83. The resistance of a conductor depends upon:

    (a)   Pot difference between its ends

    (b)   The nature of material

    (c)   Dimension

    (d)   The nature, dimension and physical state of conductor

84. If the resistance of the conductor is increased, the current will:

    (a)   Remains the same   **(b)**   Increase

    (c)   Decrease   **(d)**   None of above

85. The resistance of a conductor of length L, cross-sectional area A and resistivity ρ is given by:

    (a) $R = \dfrac{L}{\rho A}$ **(b)** $R = \dfrac{\rho L}{A}$

    (c) $R = \dfrac{A}{\rho L}$ **(d)** $R = \dfrac{\rho}{LA}$

86. The resistivity of the material having the resistance R, cross-sectional area A and length L is:

    (a) $\rho = \dfrac{AL}{R}$ **(b)** $\rho = \dfrac{A}{LR}$

    (c) $\rho = \dfrac{RA}{L}$ **(d)** $\rho = \dfrac{RL}{A}$

87. The resistance of the conductor does not depend upon its:

    (a) Mass (b) Length

    (c) Cross-sectional area (d) Resistivity

88. When the temperature of a conductor is raised, its resistance:

    (a) Remains the same (b) Always increase

    (c) Always decrease (d) None of these

89. The resistance of the conductor increase with the increase in its:

    (a) Cross-sectional area (b) Length

    (c) Diameter (d) None of these

90. The resistance of the conductor increases due to rise of temp of a conductor because collision cross-section of the atoms:

    (a) Remain, unchanged (b) Decreases

    (c) Increases (d) None of above

91. Non-ohmic devices are:

    (a) Filament of a bulb (b) Semiconductor diode

    (c) Both (a) and (b) (d) None of above

92. In series circuit, the pot difference across each resistance is:

    (a) Different (b) Same

    (c) Variable (d) None of these

93. In parallel circuit, the current has:

    (a) Many paths (b) Two paths

    (c) Three paths (d) None of these

94. The equivalent resistance in series circuit is:

    (a) $R_e = R_1 + R_2 + R_3$ (b) $R_e = \dfrac{1}{R_1} + \dfrac{1}{R_2} + \dfrac{1}{R_3}$

    (c) $\dfrac{1}{R_e} = \dfrac{1}{R_1} + \dfrac{1}{R_2} + \dfrac{1}{R_3}$ (d) All of above

95. The equivalent resistance in parallel circuit is:

    (a) $R_e = R_1 + R_2 + R_3$ (b) $R_e = \dfrac{1}{R_1} + \dfrac{1}{R_2} + \dfrac{1}{R_3}$

    (c) $\dfrac{1}{R_e} = \dfrac{1}{R_1} + \dfrac{1}{R_2} + \dfrac{1}{R_3}$ (d) All of above

96. The Fractional change in resistivity per unit original resistivity per Kelvin in temperature is known as:

    (a) Temperature coefficient of resistance (b) Temperature coefficient of resistivity

    (c) Temperature coefficient of conductivity (d) None of these

97. The SI unit of the temp coefficient of resistivity of a material is:

(a) K

(b) K^{-1}

(c) Ohm K

(d) Ohm

98. New prepared ceramic material have been found to be super conductor even at:

(a) T = 125 K

(b) T = 50 K

(c) T = 130 K

(d) T = 75 K

99. Three resistors of resistance 2, 3 and 6 Ohms are connected in parallel then their equivalent resistance is:

(a) 11.0 ohms

(b) 1.0 ohm

(c) 5.0 ohms

(d) 70 ohms

100. Which one is the best conductor:

(a) Copper

(b) Gold

(c) Silver

(d) Aluminum

101. The resistivity of ——— decrease with the increase in temp.

(a) Gold

(b) Silver

(c) Copper

(d) Silicon

102. Super conductor has ——— temperature coefficient.

(a) +ve

(b) −ve

(c) Neutral

(d) None of above

103. The tolerance of silver is:

(a) ± 20%

(b) ± 15%

(c) ± 5%

(d) ± 10%

104. The tolerance of gold is:

(a) 20%

(b) 15%

(c) ± 5%

(d) 10%

105. Resistance and resistivity of a substance:

(a) Decrease in rise of temperature

(b) Increase with rise of temperature

(c) Remains same at every temperature

(d) None of above

106. A heat sensitive resistor is called:

(a) Thermistor

(b) Variable resistor

(c) Fixed resistor

(d) None of these

107. A device which is a wire wound resistance called:

(a) Rheostat

(b) Solenoid

(c) Inductor

(d) None of above

108. A rheostat can be used as variable resistor as well as a ————.

(a) Potential divider (b) Current divider

(c) Wheat stone bridge (d) Power divider

109. The electrical power in mathematical form can be expressed as:

(a) $P = I^2 R$ (b) $P = I \times V$

(c) $P = \dfrac{V^2}{R}$ (d) All of above

110. If one end of the fixed terminals and sliding contact of a rheostat are connected in a circuit, it is to be used as:

(a) Variable resistor (b) Power supply

(c) Potential divider (d) None of above

111. Algebraic sum of currents meeting at a point is zero according to:

(a) Faraday's law (b) Ampere's law

(c) Kirchhoff first rule (d) None of above

112. If both fixed as well as the sliding contact of a rheostat are connected in a circuit, it is to be used as:

(a) Variable resistor (b) Power supply

(c) Potential divider (d) None of above

113. When ever current is drawn from the battery, its emf and terminal potential difference became:

(a) Equal (b) Different

(c) Zero (d) Negative

114. A complex system consisting of a many resistances can be solved by:

(a) Faraday's law (b) Ohm's law

(c) Kirchhoff rules (d) Ampere's law

115. Kirchoff first rule is also called the law of conservation of:

(a) Momentum (b) Mass

(c) Energy (d) Charge

116. If the source of emf is traversed from negative to positive terminal, the potential change are:

(a) Positive (b) Negative

(c) Consult (d) Zero

117. If the source of emf traversed from positive to negative terminals, the potential change are:

(a) Negative (b) Constant

(c) Zero (d) Positive

118. If the resistor is traversed in the direction of current, the potential change are:

(a) Negative (b) Zero

(c) Constant (d) Positive

119. When the Wheatstone bridge is balanced, the galvanometer shows zero deflection because:

    (a) Both the terminals of galvanometer are at the same potential

    (b) Both terminals of the galvanometer have maximum potential

    (c) The resistance of galvanometer becomes zero

    (d) The resistance of galvanometer becomes maximum

120. Wheat stone bridge is an arrangement consisting of:

    (a) Four resistances   **(b)** Three resistances

    (c) Five resistances   **(d)** None of above

121. A balanced Wheatstone bridge is used to measure the:

    (a) The current   **(b)** Pot difference

    (c) An unknown resistance   **(d)** None of above

122. The condition for the Wheatstone bridge to be balanced is given by:

    (a) $\dfrac{R_1}{R_2} = \dfrac{R_3}{R_4}$ **(b)** $\dfrac{R_2}{R_1} = \dfrac{R_3}{R_4}$

    (c) $\dfrac{R_1}{R_2} = \dfrac{R_4}{R_3}$ **(d)** None of above

123. Which one of the following instrument can measure the unknown resistance with sufficient accuracy:

    (a) Potentiometer   **(b)** Slide wire bridge

    (c) Galvanometer   **(d)** All of above

124. Slide wire bridge is a practical form of the:

    (a) Voltmeter   **(b)** Galvanometer

    (c) Wheatstone bridge   **(d)** Ammeter

125. An instrument which can measure potential without drawing any current is called:

    (a) Voltmeter   **(b)** Potentiometer

    (c) Galvanometer   **(d)** Ammeter

126. A device which gives continuously varying ———— is called potential divider.

    (a) Potential difference   **(b)** Capacitance

    (c) Charge   **(d)** Inductance

127. The instrument used to compare the emf of two cells is called:

    (a) A potentiometer   **(b)** An ammeter

   **(c)** A galvanometer   **(d)** All of above

128. Which device is used to determine internal resistance of a cell:

(a) Potentiometer

(b) Wheat stone bridge

(c) Voltmeter

(d) Ammeter

129. The algebraic sum of potential changes for a closed circuit is zero according to:

(a) Kirchhoff's 2nd rule

(b) Kirchhoff's first rule

(c) Ampere's law

(d) Joul's law

130. Internal resistance is the resistance offered by:

(a) The conductor

(b) The circuit

(c) The resistor

(d) Source of emf

131. The equation for the power dissipation in a resistor is:

(a) $P = I^2R$

(b) $P = \dfrac{V^2}{R}$

(c) $P = IV$

(d) All of above

132. The emf E of the source is expressed by:

(a) $E = \dfrac{\Delta q}{\Delta w}$

(b) $E = \dfrac{\Delta w}{\Delta Q^2}$

(c) $E = \dfrac{\Delta w}{\Delta q}$

(d) $E = \dfrac{\Delta w}{\Delta t}$

133. Which one of the following quantities in electricity is analogous to mass in mechanics:

(a) Resistance

(b) Potential

(c) Charge

(d) Inductance

134. The temp coefficient of resistance is positive for:

(a) Aluminum

(b) Germanium

(c) Carbon

(d) None of the above

135. On increasing the length of a wire, the specific resistance of the material of the wire:

(a) Decreases

(b) Increases

(c) Remains unchanged

(d) First decrease then increase

136. Which one of the following is the best material for making connecting wire:

(a) Nichrome

(b) Manganin

(c) Copper

(d) None of the above

137. When three resistances 2Ω, 4Ω and 6Ω connected in parallel the equivalent resistance is:

(a) $\dfrac{11}{12}\Omega$

(b) $\dfrac{12}{11}\Omega$

(c) $12\,\Omega$

(d) $0\,\Omega$

138. Two resistances R_1 and R_2 are connected in parallel. The equivalent resistance of the combination is equal to:

(a) $\dfrac{R_1 R_2}{R_1 + R_2}$

(b) $\dfrac{R_1 + R_2}{R_1 R_2}$

(c) $R_1 + R_2$

(d) $R_2 - R_2$

139. The resistance of a conductor increases with the rise in temp. This is due to:

(a) Increase in mass of electron

(b) Decrease of electron density

(c) The decrease of relaxation time

(d) None of above

140. In a closed circuit, the e.m.f and internal resistance of cell are E and r respectively. If the external resistance in the circuit is R then the Ohm's law has the form:

(a) $I = \dfrac{E}{R}$

(b) $I = \dfrac{E}{Rr}$

(c) $I = \dfrac{E}{r}$

(d) $I = \dfrac{E}{R+r}$

141. Three resistance R_1, R_2 and R_3 are connected in parallel. The resultant resistance R is:

(a) Greater than sum of three resistances

(b) Equal to sum of three resistances

(c) Less than the sum of three resistances

(d) None of the above

142. The specific resistance of the material of the wire depends on:

(a) Area of cross section

(b) Mass

(c) Length

(d) None of the above

143. There are three equal resistances. How many different combination, of these resistances are possible:

(a) Six

(b) Three

(c) One

(d) Two

144. The difference of potential between the terminals of a cell in an open circuit is called:

(a) e.m.f

(b) Resistances

(c) Capacitance

(d) Potential difference

145. In which one of the following substances, the resistance decreases with increase in temp:

(a) Copper

(b) Silver

(c) Carbon

(d) None of these

146. In a wheat stone bridge, the resistances in the ratio arms are $100\ \Omega$ and $150\ \Omega$ respectively. If $R = 80\Omega$, the resistance of the 4th arm will be:

(a) $80\ \Omega$

(b) $70\ \Omega$

(c) $150\ \Omega$

(d) $120\ \Omega$

147. Three resistances of 4Ω, 6Ω and $10\ \Omega$ are connected in parallel in a circuit with a battery of e.m.f 4.53 volt. If the current through the 6Ω resistance is 0.6A. The internal resistance of the battery is:

(a) $0.5\ \Omega$ (b) $0.4\ \Omega$

(c) $0.3\ \Omega$ (d) $0.2\ \Omega$
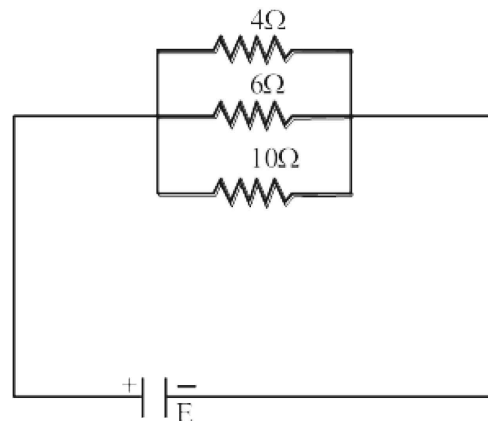
148. Which one of the following is the unit of potential gradient:

(a) Volt × Metre   (b) Volt/Amp

(c) Volt/Metre   (d) $Volt/Amp^2$

149. The potential gradient of a wire depends:

(a) Only on current flowing in the wire

(b) Only on resistance per unit length of wire

(c) On the current following in the wire and resistance per unit length of wire

(d) None of the above

150. Which one of the following is the unit of the e.m.f. of a cell:

(a) J/C   (b) A/Ω

(c) A   (d) N/C

151. Internal resistance of the cell is the resistance of:

(a) Electrolyte used in cell   (b) The electrodes of the cell

(c) The vessel of the cell   (d) None of the above

152. In potentiometer experiment, when the galvanometer shows no deflection, then no current flows in:

(a) Galvanometer circuit   (b) Potentiometer wire

(c) Battery   (d) None of the above

153. The potentiometer wire is made of:

(a) Copper   (b) Manganin

(c) Aluminum   (d) Steel

154. In potentiometer, the length of its wire is doubled, the accuracy in determining the null point will:

(a) Decrease   (b) Increase

(c) Remains unchanged   (d) None of the above

155. Current through a potentiometer wire decrease then null point will be obtained for:

(a) The lower length of wire than before   (b) The higher length of wire than before

(c) The same length of wire   (d) None of the above

156. The best instrument for the accurate measurement of e.m.f of a cell is:

(a) A potentiometer   (b) A voltmeter

(c) An ammeter   (d) Slide wire bridge

157. The potential difference across the terminals of a cell varies with the current drawn from the cell in accordance with the graph as shown:

(a)

(b)

(c)

(d)
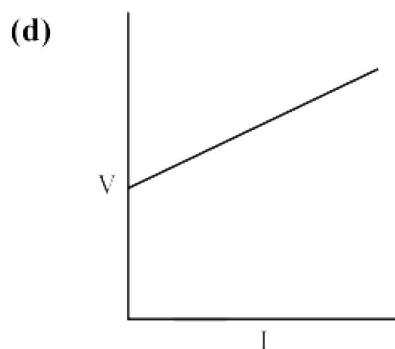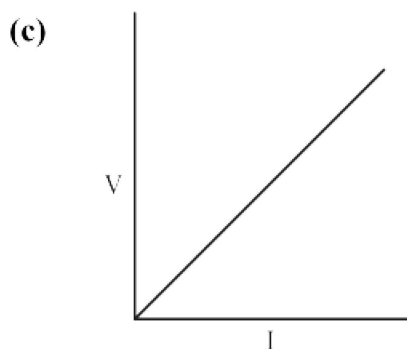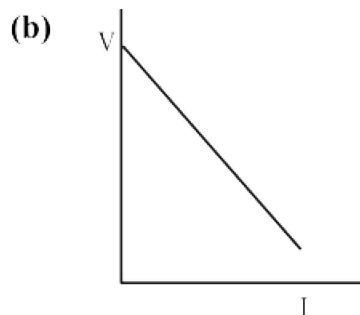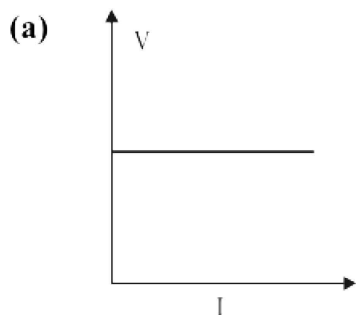
158. Drift velocity of electron, in metal, is of the order of:

(a) 10^{-3} cm/s

(b) 10^{-3} m/s

(c) 10^3 m/s

(d) 10^{-3} mm/s

159. Secondary cells are:

(a) Non-chargeable

(b) Rechargeable

(c) Both (a), (b)

(d) Like primary cells

160. If three resistors are connected parallel to each other then their equivalent resistance is:

(a) Greater than larger individual resistance

(b) Less than smaller individual resistance

(c) Equal to larger value

(d) Equal to smaller value

161. A potentiometer can be used to:

(a) Find emf

(b) Compare emf of two cells

(c) Find internal resistance of cell

(d) All of these

162. A wire of resistance R is cut into two equal parts, its resistance becomes R/2, what happens to resistivity:

(a) Double

(b) Same

(c) Half

(d) One fourth

163. The resistance of a conductor does not depend on its:

(a) Length

(b) Area of cross-section

(c) Resistivity

(d) Mass

164. The conductance of a conductor increases when:

(a) Its temperature increase

(b) It temperature decrease

(c) Its length increases

(d) None of these

165. Unit (S.I) of temperature coefficient of resistivity of a material is:

(a) K

(b) K^{-1}

(c) °C

(d) K^{-2}

166. Heat generated by a 40 watt bulb in one hour is:

(a) 4800 J

(b) 40 J

(c) 144000 J

(d) 14400 J

167. A 100 watt bulb is operated by 200 volt, the current flowing through bulb is:

(a) 1 A

(b) 0.5 A

(c) 2.5 A

(d) 3.5 A

168. The resistance of a 60 watt bulb in a 120 volt line is:

(a) 20 ohm

(b) 0.5 ohm

(c) 240 ohm

(d) 2 ohm

169. If a 40 watt bulb is on for 2 hours, how much heat is generated?

(a) 280×10^5 J

(b) 288×10^3 J

(c) 80 J

(d) 400 J

170. Maximum power is delivered to a load when:

(a) Internal resistance = External resistance

(b) Internal resistance > External resistance

(c) Internal resistance < External resistance

(d) None of these

171. Kirchhoff's 2nd rule obey law of conservation of:

(a) Momentum

(b) Charge

(c) Energy

(d) None of these

172. The instrument which measures potential difference accurately:

(a) Potentiometer

(b) Digital voltmeter

(c) Cathode ray oscilloscope

(d) All of above

173. Terminal potential difference is greater than emf of the cell when:

(a) Circuit is open

(b) Circuit is closed

(c) Small battery is charged by bigger battery

(d) None of these

174. e.m.f. is the conversion of ————— energy into electrical energy.

(a) Chemical

(b) Solar

(c) Light

(d) None of these

175. A resistance R is placed in parallel with another resistance of 40 Ω, their equivalent resistance is 24 Ω the value of R is:

(a) 20 Ω

(b) 40 Ω

(c) 60 Ω

(d) 80 Ω

176. The product of resistance and conductance is:

(a) 1

(b) Resistivity

(c) Conductance

(d) Zero

ANSWERS

1.	(d)	**2.**	(a)	**3.**	(b)	**4.**	(b)	**5.**	(a)
6.	(b)	**7.**	(b)	**8.**	(b)	**9.**	(b)	**10.**	(a)
11.	(a)	**12.**	(b)	**13.**	(a)	**14.**	(d)	**15.**	(c)
16.	(a)	**17.**	(b)	**18.**	(a)	**19.**	(d)	**20.**	(b)
21.	(c)	**22.**	(c)	**23.**	(a)	**24.**	(a)	**25.**	(c)
26.	(d)	**27.**	(a)	**28.**	(c)	**29.**	(a)	**30.**	(d)
31.	(d)	**32.**	(a)	**33.**	(c)	**34.**	(a)	**35.**	(a)
36.	(d)	**37.**	(b)	**38.**	(c)	**39.**	(a)	**40.**	(b)
41.	(a)	**42.**	(c)	**43.**	(a)	**44.**	(a)	**45.**	(a)
46.	(a)	**47.**	(a)	**48.**	(a)	**49.**	(b)	**50.**	(b)
51.	(a)	**52.**	(a)	**53.**	(b)	**54.**	(b)	**55.**	(a)
56.	(b)	**57.**	(d)	**58.**	(c)	**59.**	(a)	**60.**	(b)
61.	(d)	**62.**	(a)	**63.**	(c)	**64.**	(a)	**65.**	(d)
66.	(a)	**67.**	(d)	**68.**	(c)	**69.**	(d)	**70.**	(a)
71.	(b)	**72.**	(b)	**73.**	(a)	**74.**	(c)	**75.**	(c)
76.	(a)	**77.**	(c)	**78.**	(c)	**79.**	(c)	**80.**	(a)
81.	(b)	**82.**	(b)	**83.**	(d)	**84.**	(c)	**85.**	(b)
86.	(c)	**87.**	(a)	**88.**	(b)	**89.**	(b)	**90.**	(c)
91.	(c)	**92.**	(a)	**93.**	(a)	**94.**	(a)	**95.**	(c)
96.	(b)	**97.**	(b)	**98.**	(a)	**99.**	(b)	**100.**	(c)
101.	(d)	**102.**	(b)	**103.**	(d)	**104.**	(c)	**105.**	(b)
106.	(a)	**107.**	(a)	**108.**	(a)	**109.**	(d)	**110.**	(a)
111.	(c)	**112.**	(c)	**113.**	(a)	**114.**	(c)	**115.**	(d)
116.	(a)	**117.**	(a)	**118.**	(a)	**119.**	(a)	**120.**	(a)
121.	(c)	**122.**	(a)	**123.**	(b)	**124.**	(c)	**125.**	(b)
126.	(a)	**127.**	(a)	**128.**	(a)	**129.**	(a)	**130.**	(d)
131.	(d)	**132.**	(c)	**133.**	(c)	**134.**	(a)	**135.**	(b)
136.	(c)	**137.**	(b)	**138.**	(a)	**139.**	(c)	**140.**	(d)
141.	(c)	**142.**	(c)	**143.**	(d)	**144.**	(a)	**145.**	(c)
146.	(d)	**147.**	(a)	**148.**	(c)	**149.**	(a)	**150.**	(a)
151.	(a)	**152.**	(a)	**153.**	(b)	**154.**	(b)	**155.**	(b)
156.	(a)	**157.**	(c)	**158.**	(b)	**159.**	(b)	**160.**	(b)
161.	(d)	**162.**	(b)	**163.**	(d)	**164.**	(b)	**165.**	(b)
166.	(c)	**167.**	(b)	**168.**	(c)	**169.**	(b)	**170.**	(a)
171.	(c)	**172.**	(d)	**173.**	(c)	**174.**	(a)	**175.**	(c)
176.	(a)								