28. In an electrolyte 3.2×10^{18} bivalent positive ions drift to the right per second while 3.6×10^{18} monovalent negative ions drift to the left per second. Then the current is

(a) 1.6 amp to the left (b) 1.6 amp to the right

(c) 0.45 amp to the right (d) 0.45 amp to the left

30. The specific resistance of all metals is most affected by

(a) Temperature (b) Pressure

(c) Degree of illumination (d) Applied magnetic field

31. The positive temperature coefficient of resistance is for

(a) Carbon (b) Germanium

(c) Copper (d) An electrolyte

32. The fact that the conductance of some metals rises to infinity at some temperature below a few Kelvin is called

(a) Thermal conductivity (b) Optical conductivity

(c) Magnetic conductivity (d) Superconductivity

33. Dimensions of a block are $1cm \times 1cm \times 100\ cm$. If specific resistance of its material is $3 \times 10^{-7}\ ohm - m$, then the resistance between the opposite rectangular faces is

(a) $3 \times 10^{-9}\ ohm$ (b) $3 \times 10^{-7}\ ohm$

(c) $3 \times 10^{-5}\ ohm$ (d) $3 \times 10^{-3}\ ohm$

34. In the above question, the resistance between the square faces is

(a) $3 \times 10^{-9}\ ohm$ (b) $3 \times 10^{-7}\ ohm$

(c) $3 \times 10^{-5}\ ohm$ (d) $3 \times 10^{-3}\ ohm$

37. The resistance of a wire of uniform diameter d and length L is R. The resistance of another wire of the same material but diameter $2d$ and length $4L$ will be

(a) $2R$ (b) R

(c) $R/2$ (d) $R/4$

40. 5 *amperes* of current is passed through a metallic conductor. The charge flowing in one minute in coulombs will be

(a) 5 (b) 12

(c) 1/12 (d) 300

41. Two wires of the same material are given. The first wire is twice as long as the second and has twice the diameter of the second. The resistance of the first will be

(a) Twice of the second (b) Half of the second

(c) Equal to the second (d) Four times of the second

42. An electric wire is connected across a cell of e.m.f. *E*. The current I is measured by an ammeter of resistance *R*. According to *ohm*'s law

(a) $E = I^2R$ (b) $E = IR$

(c) $E = R/I$ (d) $E = I/R$

43. The resistances of a wire at temperatures $t°C$ and $0°C$ are related by

(a) $R_t = R_0(1 + \alpha t)$ (b) $R_t = R_0(1 - \alpha t)$

(c) $R_t = R_0^2(1 + \alpha t)$ (d) $R_t = R_0^2(1 - \alpha t)$

44. An electric wire of length '*l*' and area of cross-section a has a resistance *R ohms*. Another wire of the same material having same length and area of cross-section 4*a* has a resistance of **[MP PET 1993]**

(a) 4*R* (b) *R*/4

(c) *R*/16 (d) 16*R*

45. For which of the following the resistance decreases on increasing the temperature

(a) Copper (b) Tungsten

(c) Germanium (d) Aluminium

49. A certain piece of silver of given mass is to be made like a wire. Which of the following combination of length (L) and the area of cross-sectional (A) will lead to the smallest resistance

(a) L and A

(b) $2L$ and $A/2$

(c) $L/2$ and $2A$

(d) Any of the above, because volume of silver remains same

50. The resistance of a wire is $10\,\Omega$. Its length is increased by 10% by stretching. The new resistance will now be

(a) $12\,\Omega$ (b) $1.2\,\Omega$

(c) $13\,\Omega$ (d) $11\,\Omega$

51. Resistance of tungsten wire at $150°C$ is $133\,\Omega$. Its resistance temperature coefficient is $0.0045/°C$. The resistance of this wire at $500°C$ will be

(a) $180\,\Omega$ (b) $225\,\Omega$

(c) $258\,\Omega$ (d) $317\,\Omega$

52. A metal wire of specific resistance $64\times10^{-6}\,ohm-cm$ and length 198 *cm* has a resistance of 7 *ohm*, the radius of the wire will be

(a) 2.4 *cm* (b) 0.24 *cm*

(c) 0.024 *cm* (d) 24 *cm*

53. A copper wire of length 1 *m* and radius 1 *mm* is joined in series with an iron wire of length 2 *m* and radius 3 *mm* and a current is passed through the wires. The ratio of the current density in the copper and iron wires is

(a) 18 : 1 (b) 9 : 1

(c) 6 : 1 (d) 2 : 3

54. For a metallic wire, the ratio V/i ($V=$ the applied potential difference, i = current flowing) is

(a) Independent of temperature

(b) Increases as the temperature rises

(c) Decreases as the temperature rises

(d) Increases or decreases as temperature rises, depending upon the metal

55. The resistance of a wire is R. If the length of the wire is doubled by stretching, then the new resistance will be

(a) $2R$ (b) $4R$

(c) R (d) $\frac{R}{4}$

56. Which of the following has a negative temperature coefficient

(a) *C* (b) *Fe*

(c) *Mn* (d) *Ag*

57. The reciprocal of resistance is

(a) Conductance (b) Resistivity

(c) Voltage (d) None of the above

58. A solenoid is at potential difference 60 *V* and current flows through it is 15 *ampere*, then the resistance of coil will be

[AFMC 1995]

(a) $4\,\Omega$ (b) $8\,\Omega$

(c) $0.25\,\Omega$ (d) $2\,\Omega$

59. All of the following statements are true except

[Manipal MEE 1995]

(a) Conductance is the reciprocal of resistance and is measured in *Siemens*

(b) *Ohm*'s law is not applicable at very low and very high temperatures

(c) *Ohm*'s law is applicable to semiconductors

(d) *Ohm*'s law is not applicable to electron tubes, discharge tubes and electrolytes

60. A potential difference of V is applied at the ends of a copper wire of length l and diameter d. On doubling only d, drift velocity

(a) Becomes two times (b) Becomes half

(c) Does not change (d) Becomes one fourth

61. If the resistance of a conductor is 5 Ω at 50*C* and 7 Ω at 100*C* then the mean temperature coefficient of resistance of the material is

(a) 0.008/*C* (b) 0.006/*C*

(c) 0.004/*C* (d) 0.001/*C*

62. The resistance of a discharge tube is

(a) *Ohm*ic (b) Non-*ohm*ic

(c) Both (a) and (b) (d) Zero

64. A platinum resistance thermometer has a resistance of $50\,\Omega$ at $20°C$. When dipped in a liquid the resistance becomes $76.8\,\Omega$. The temperature coefficient of resistance for platinum is $\alpha=3.92\times10^{-3}/°C$. The temperature of the liquid is

(a) $100°C$ (b) $137°C$

(c) $167°C$ (d) $200°C$