53. The process of super imposing message signal on high frequency carrier wave is called
(1) Modulation (2) Transmission
(3) Demodulation (4) Amplification

Ans: (1)

54. Nature of equipotential surface for a point charge is
(1) Plane with charge on the surface.
(2) Sphere with charge on the surface of the sphere.
(3) Sphere with charge at the centre of the sphere.
(4) Ellipsoid with charge at foci.

Ans: (3)

55. An element X decays into element Z by two-step process.

$X \rightarrow Y \quad {}_{2}^{4}He$

$Y \rightarrow Z \quad 2\bar{e}$ then

(1) X & Z are isotopes. (2) X & Z are isotones.
(3) X & Y are isotopes. (4) X & Z are isobars.

Ans: (1)

56. Light of wavelength 600 ηm is incident normally on a slit of width 0.2 mm. The angular width of central maxima in the diffraction pattern is
(measured from minimum to minimum)

(1) 4.5×10^{-3} rad (2) 2.4×10^{-3} rad
(3) 4×10^{-3} rad (4) 6×10^{-3} rad

Ans: (4)

57. A long solenoid with 40 turns per cm carries a current of 1 A. The magnetic energy stored per unit volume is_____J/m^3.

(1) 6.4π (2) 1.6π
(3) 32π (4) 3.2π

Ans: (4)

58. A pan filled with hot food cools from 94 °C to 86 °C in 2 minutes. When the room temperature is 20 °C. How long will it cool from 74 °C to 66 °C ?
(1) 1.8 minutes (2) 2.5 minutes
(3) 2.8 minutes (4) 2 minutes

Ans: (3)

59. Three projectiles A, B and C are projected at an angle of 30°, 45°, 60° respectively. If R_A, R_B and R_C are ranges of A, B and C respectively, then (velocity of projection is same for A, B & C)
(1) $R_A = R_C < R_B$ (2) $R_A < R_B < R_C$
(3) $R_A = R_C > R_B$ (4) $R_A = R_B = R_C$

Ans: (1)

60. The quantity of a charge that will be transferred by a current flow of 20 A over 1 hour 30 minutes period is
(1) 1.8×10^{4} C (2) 5.4×10^{3} C
(3) 10.8×10^{4} C (4) 10.8×10^{3} C

Ans: (3)