68. The decay process $n \to p + e^- + \bar{\nu}$ is

   (A) pure Fermi type

   (B) pure Gamow-Teller type

   (C) both Fermi and Gamow-Teller types

   (D) forbidden decay

69. The excited state of a nucleus with spin parity 3^+ decays to the state 1^+ through γ-transitions. The allowed multipole fields are

   (A) $E4, M3, E2$

   (B) $M4, E3, M2$

   (C) $E3, M2, E1$

   (D) $M3, E2, M1$

70. An isochronous cyclotron has a maximum radius of 0.3 m and a magnetic field at this radius of 1.6 T. The kinetic energy of a circulating proton at this radius will be

   (A) 8 MeV

   (B) 11 MeV

   (C) 19 MeV

   (D) 22 MeV

71. In case of electromagnetic wave propagation along the axis of a rectangular wave guide

   (A) TE_{10} mode is dominant mode

   (B) TM_{10} mode is dominant mode

   (C) both TE_{10} and TM_{10} are dominant modes.

   (D) Neither TE_{10} nor TM_{10} mode is a dominant mode.

72. If the conductivity σ of the plasma is defined by the wave equation

$$J = Nev = \sigma E_o e^{-i\omega t}$$

what is the conductivity of the plasma?

   (A) Ne

   (B) $i\left(\dfrac{Ne^2}{m}\right)$

   (C) $i\left(\dfrac{Ne^2}{m\omega}\right)$

   (D) $\dfrac{Ne^2}{m}$

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