Charged Particle Interactions

65. Charged particles interact with body tissues by:

    A. Photoelectric process
    B. Triplet production
    C. Ionization and excitation
    D. All of the above

66. X-rays are more likely to be produced by interaction between:

    A. Alpha particles and nuclei
    B. Protons and nuclei
    C. Electrons and nuclei
    D. Neutrons and nuclei

67. The rate of kinetic energy loss per unit path length by a charged particle is called:

    A. Linear attenuation coefficient
    B. Stopping power
    C. Mass energy absorption coefficient
    D. All of the above

68. The rate of energy loss by a charged particle is:

    A. Proportional to the particle charge
    B. Proportional to the square of the particle charge
    C. Independent of the charge
    D. None of the above

69. Heavy particles lose most of their energy:

    A. Immediately as they enter the medium
    B. In the middle of their range
    C. Near the end of their range
    D. Equally throughout their range

70. The Bragg peak is not observed in electrons because of their:

    A. High speed
    B. Negative charge
    C. Small mass
    D. Short life span

71. Excitation produced by electron beams is of:

    A. Nucleus of the atom
    B. Neutrons of the atom
    C. Orbital electrons of the atom
    D. Protons of the atom

72. Which of the following particles will penetrate the deepest in tissue:

A. 20 keV Auger electron
B. 10 MeV alpha particle
C. 20 keV proton
D. 1 MeV positron
E. 2 MeV beta particle

73. When an electron is ejected from an atom and leaves an ionization track, it is called:

A. A characteristic electron
B. An Auger electron
C. A delta ray
D. An electrostatic charge

74. In the production of bremsstrahlung, the electron:

A. Ejects a cloud of electrons
B. Slows down and loses some of its energy as an x-ray photon
C. Produces a heavy particle
D. Ejects an electron from the atom