General topics for doctoral study entrance examination

Branch: Radiological Physics
Department: Dosimetry and Application of Ionizing Radiation

1. Basic knowledge and overview of: radiological physics, dosimetry, detection methods of ionizing radiation and radiation protection
2. Clinical dosimetry - dose assessment in radiotherapy and radio diagnostic
3. Advance radiotherapy techniques - IMRT, IGRT, IMAT
4. Hadron therapy
5. Radiotherapy instrumentation - radionuclide sources of ionizing radiation used in medical applications, particle accelerators, ...
6. Radiobiology - effects of ionizing radiation on cells, tissues, ...
7. Principle of MR, CT, PET/CT, SPECT/CR, PET/CT and their clinical use, 3D imaging methods
8. Positron emission tomography (PET) - radiopharmaceuticals, instrumentation and detector construction